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Journal of the Society of Arts.

FRIDAY, APRIL 2, 1869.

Announcements by the Council.

ORDINARY MEETINGS.

Wednesday Evenings at eight o'clock :—

APRIL 7.—“On the Theory of Boiling in connection with some processes in the Useful Arts.” By CHARLES TOMLINSON, Esq., F.R.S., F.C.S. On this evening W. BRIDGES ADAMS, Esq., will preside.

APRIL 14.—“Spain Commercially and Economically Considered.” By E. M. UNDERDOWN, Esq., Barrister-at-law.

APRIL 21.—“On Trade Marks.” By W. WYBROW ROBERTSON, Esq.

APRIL 28.—“On the Duties of the Architect with reference to the Arrangement and Structure of a Building.” By ROGER SMITH, Esq. On this evening Sir Digby Wyatt will preside.

MAY 5. “On the Formation of Industrial Settlements in our Colonies.” By Col. FRANCIS C. MAUDE, C.B.

FINAL EXAMINATIONS, 1869.

In order to avoid holding these Examinations on the same evenings as those of the Department of Science and Art, it has been decided to hold them, in 1869, on the evenings of

TUESDAY, the 20th APRIL,

WEDNESDAY, the 21st „

THURSDAY, the 22nd „

FRIDAY, the 23rd „

From 7 p.m. to 10 p.m., instead of on the 27th, 28th, 29th, and 30th April, as announced in the Programme of Examinations for 1869.

CANTOR LECTURES.

The Third Course of Cantor Lectures for the present Session will be “On Applied Mechanics,” and will consist of Four Lectures, to be delivered by JOHN ANDERSON, Esq., C.E., Superintendent of Machinery to the War Department, as follows :—

LECTURE I.—MONDAY, APRIL 12TH.

Applied Mechanics in relation to Art and Science.

LECTURE II.—MONDAY, APRIL 19TH.

Applied Mechanics in relation to Natural Properties of Materials.

LECTURE III.—MONDAY, APRIL 26TH.

Applied Mechanics in relation to Natural Laws in processes.

LECTURE IV.—MONDAY, MAY 3RD.

Applied Mechanics in relation to Natural Power.

Each lecture will begin at eight o'clock. These Lectures are open to Members, each of whom has the privilege of introducing two friends to each lecture. Tickets for this purpose are forwarded with this week's *Journal*.

COMMITTEE ON INDIA.

Six Conferences are now in course of being held for the discussion of the following subjects, viz.:—

Tea Cultivation in India.

Hill Settlements and Sanitaria.

Waste Lands in India.

Trade with Central Asia, Thibet, and South-Western China.

Indian Fibres.

Silk Cultivation and Supply.

The following evenings have been fixed for the remaining five conferences :—

Friday, April 2nd.

„ April 16th.

„ April 30th.

„ May 14th.

„ May 28th.

At these Meetings the chair will be taken at 8 o'clock, and the discussion will be opened by a paper.

This evening (Friday), April 2nd, a paper, “On Silk Cultivation and Supply in India,” will be read by P. L. SIMMONDS, Esq. Dr. Forbes Watson will preside.

Members of the Society interested in Indian questions are invited to attend.

PISCICULTURAL COMMITTEE.

On Friday evening, the 9th inst., a meeting will be held, when a paper, “On Salmon Laws and Salmon Rivers,” by Dr. W.M. PEARD, of Bath, will be read and discussed. The chair will be taken at eight o'clock.

Members of the Society interested in Pisciculture are invited to attend.

SUBSCRIPTIONS.

The Lady-day subscriptions are due, and should be forwarded by cheque or Post-office order, crossed “Coutts and Co.,” and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

Proceedings of the Society.

THAMES EMBANKMENT COMMITTEE.

The third meeting of the Committee took place on Tuesday, the 23rd ult., at 11 a.m. Present—Lord Elcho, M.P., in the chair; Sir Charles Trevelyan, K.C.B., the Right Hon. Wm. Cowper, M.P., Lieut.-Col. Ewart, R.E., Messrs. Samuel Redgrave, Seymour Teulon, W. H. Gregory, M.P., George E. Street, A.R.A., Hyde Clarke, Edwin Field, C. F. Hayward, and W. R. Drake.

Mr. G. E. STREET, A.R.A., commenced the proceedings by reading the following observations on Sir Charles Trevelyan's scheme—

Whether Courts and Offices should be on the same Site.

Sir C. Trevelyan agrees, with all who have studied the question, in thinking that they ought to be. He has not observed, I think, that in my plan the entrances to the offices are all from the outside of the building, so that the whole traffic to the offices is kept distinct from that going to the courts, and the internal quadrangles are consequently very free from noise. I hold this feature in my plan to be of the utmost value, and one which ought to be attended to wherever the building is placed. There would, of course, be no difficulty in so altering Sir C. Trevelyan's plan as to make roadways east and west of the building, but this would reduce his building area very largely, and bring it to about the same as that of the Carey-street site, and the great fall of the ground would make it much more difficult to make the accesss so convenient as they would be on the Carey-street site.

Whether the area of the Embankment site is sufficient for the Courts and Offices.

The large map which has been prepared from the Ordnance Survey will show that Sir C. Trevelyan's figures are not accurate, and cannot be made a basis for his conclusions. The Carey-street site, including the eastern and western approach road, is 850 feet from east to west. And it is impossible that more than 850 feet can be obtained on the south side of the Strand without taking the site of King's-college, as well as the site Sir Charles Trevelyan professes to take. The dimensions from north to south are about the same on both sites, if the front of the courts is allowed to be built in advance of Somerset-house, and in a line with the terrace below it. The Embankment site may have additional depth on the east side. This is, however, no great advantage. It is clearly much better to have a regular parallelogram like the Carey-street site than an irregular one like the Embankment site. I am also strongly of opinion that a building on the Embankment of so great length would be felt to be very tame and monotonous if it were to be a continuous line of building with no break. It ought to have some grand recesses, showing something of the internal quadrangles of the building from the river, and so giving some opportunity of obtaining striking light and shade, and good architectural effect. The object of putting the building on the Embankment being chiefly an architectural one, it is clearly absurd to think of building on so economical a system as to ignore architectural effect; and, as the architect of the building, I think I may fairly claim additional space on this site, in order to give what is asked for, a grand architectural composition on the banks of the Thames. Greenwich Hospital appears to me to offer a far finer illustration of what is required than Somerset-house; and the very fact that the latter building has an unbroken façade, seems to me to make it very desirable to aim at a different sort of effect in a building which is to be next to it, but whose lines will not be parallel with it.

A carefully prepared map of the two sites to a large scale shows clearly that if approach roads are left on the east and west sides of the building (as they must be), there is just space for a building of the area I have planned on the Embankment site. But there is no more than proper space, and Sir C. Trevelyan's estimate of an excess of 76,000 feet is evidently an entirely mistaken estimate.

Accessibility of the Site to the Public.

On this head I have only to remark that the Carey-street site is very easily reached from the Embankment by roads practicable for carriages, whilst a very slight alteration of approaches on the north of Carey-street will make the access to the building more easy from all the great railway stations—the Great Western, North Western, Midland, Great Northern, and Eastern Counties—than it would be if the building were on the

south side of the Strand. Sir C. Trevelyan's scheme would bring the whole of the traffic through or under the building itself. My view is, that though the building ought to be accessible on all sides, the less it has to do immediately with vast thoroughfares the better.

Sir Charles Trevelyan has referred with approbation to the suggestions for new streets which I made in my report as one of the competing architects, and has based his calculations as to the cost of approaches upon this report. It is only right, therefore, to say that this report has never been sanctioned by the Commission, and that I have made my final plans with a view to much simpler and cheaper alterations of existing thoroughfares, and which would, I believe, be quite as satisfactory as those I originally proposed. The wants which I think ought to be provided for are, first, a better approach from the north side of London; and second, a good new thoroughfare from west to east, sufficiently near to the courts to bring people to them without being so near as to make a noisy traffic close to their walls.

The first want would be very easily met by continuing my new western approach road by a short new street running N.W. until it meets a prolongation of the western side of Lincoln's-inn-fields. It would then pass on to Holborn, over the site of Gate-street, and then on to the north of Holborn, until it intersects Southampton-row. It would then only be necessary to remove the gate on the Bedford estate in Woburn-place to give a very straight and most convenient roadway from Camden-town, by Seymour-street, to the embankment, passing just to the west of the new building.

The second approach would be even more easily made, and would give another great thoroughfare east and west from Piccadilly to the top of the Holborn- viaduct. To accomplish this, it would only be necessary to make slight alterations at the east and west ends of Great Queen-street, and to continue on the roadway on the northern side of Lincoln's-inn-fields into the wide part of Holborn. This road would give an admirable access both from the west, and from the east and northeast, would be short, and would involve very little interference with valuable property. Looking, moreover, to the very small cost of making such a street as Garrick-street, I cannot doubt that such alterations as I have proposed would be made at an extremely small outlay, whilst all of them are absolutely required for the general purposes of the City, and would not, therefore, be fairly chargeable to the new courts of law. They would have the incidental advantage of diverting much of the traffic along Chancery-lane and Carey-street, and of leaving the vast mass of chambers in and about Lincoln's-inn almost untouched, and yet easily approachable on all sides.

Sir Charles Trevelyan assumed that an alteration of the Strand opposite his site would equally be required if the Carey-street site were adopted. I do not think this would be the case. It would, no doubt, be in any case a very desirable metropolitan improvement, but my plan has been made so that it may be carried out without the slightest necessity for touching any of this block of buildings beyond what has already been applied for. The Commissioners impressed on me the necessity of so planning my building as to make such expenditure unnecessary, and this I have been most careful to do.

I do not see much advantage in the opening proposed by Sir C. Trevelyan from the eastern side of Lincoln's-inn-fields to Holborn, as it could not be continued north of Holborn.

Mr. Shields has proposed a scheme of approaches in his report to the Chancellor of the Exchequer to which I object most strongly. It is not only a very expensive scheme, but it brings all the traffic of a great main street and of a railway along Carey-street, so that there would be hardly a quiet spot in the whole building area. Moreover, the roads by Fleet-street and the Embankment give two good means of approach from the City, and I cannot think that a third main road is required, leading to the same quarter, as Mr. Shields proposes. The real want is

the communication with the north-east, which my scheme provides by means of its connection with the new street leading from Holborn by the New Cattle Market to Finsbury.

The Comparative Cost of the Two Sites.

Upon this head I have no observation to make, beyond referring to what I have just said on the subject of approaches, as to the cost of which I think Sir C. Trevelyan has formed a most exaggerated estimate. I may also observe that the experience of any architect would enable him to say that it is always more costly to build on a steep incline than on a nearly level site, and that I believe the building on the Embankment, if it is to be really worthy of its position, would cost more than one on the Carey-street site would. I agree with Sir C. Trevelyan in desiring very much to see the western side of the Law Institution somewhat altered or remodelled. Its lines are not square with the lines of my building, and though it is not so close to my front as Sir C. Trevelyan supposes, it is undoubtedly too near. It might, however, be altered, or even rebuilt, if such a strong measure were held to be desirable in connection with the new courts, at a vastly less cost than Sir C. Trevelyan estimates, and it is no nearer to my building than the buildings in the Temple would be to one on Sir C. Trevelyan's plan for the Embankment site, the nearest point being 30 feet.

The Fitness of the Strand Site on Architectural or Esthetical Grounds.

I cannot but think that the Carey-street site has been most unnecessarily disparaged. It appears to me to have some very great advantages, which may be allowed without the slightest disparagement of the Embankment site. The ground on which it stands is so well raised above the river, that any large and lofty building erected on it ought to add enormously to the architectural effect of London in all distant views, and even in all views from the bridges. The building would stand on ground which is as high above the river as the ground on which St. Paul's stands; and we all know how magnificent an effect such an elevation produces. We have all, I suppose, recognized the misfortune under which Sir C. Barry laboured in having to build on such a site as the river side at Westminster; and, though I do not compare the Embankment site to that of the Houses of Parliament (to which it is very superior), it has to some extent the same defect when compared with the Carey-street site. As I have planned it, the building would be fairly well seen on all sides—close at hand, as well as from the distance. On the south side the Strand is so wide (no less than 220 feet at the widest part) that an admirable view of its principal front would be obtained. And it would be no small advantage that the general public would mainly keep the southern side of the Strand—as they always have done—and so would usually see the south or sunny front of the building; whilst the professional public would keep to the northern side of the Strand, and so largely relieve the crowded pavement. In contrast to this, the Strand front in Sir C. Trevelyan's plan would be on the shady as well as on the already too-crowded side of the street, and would cause additional obstruction by bringing so much additional traffic to the same side of the street. I believe the consequence would be that a very large proportion of people going along the Strand would never get a good view of the building, even if the Strand were so widened as to make any general view at all possible, whilst in any case one may be sure that so grand a width as that of the Strand in front of Carey-street is scarcely likely to be obtained, owing to the enormous cost it would involve.

If my plan is carried out in its integrity, the upper part of the great central hall would be as well seen as is the upper part of the western front of St. Paul's, and it would be seen not only from the south, but generally

also from the north. The site is at a happy distance from St. Paul's and Westminster, and just where so great a city requires some striking architectural feature to relieve its monotony. The detail of architecture is better seen in near views than in distant ones, and the streets I have provided all round my building will admit of near views of every part of it. I should contemplate with considerable sorrow the adoption of any site which really involved eastern and western fronts without any thoroughfares along them (as Sir C. Trevelyan proposes); and I cannot see why, if the Embankment site is chosen, it should be saddled with this very unnecessary drawback.

The value of a site in an architect's eyes depends upon three considerations, first, its fitness for its purpose; second, its fitness for enabling everyone to study with the greatest ease all parts of the building; and, finally, the appropriateness of its surroundings. Now, as to fitness for the purpose, I cannot think the question admits of further argument. We have heard, I presume, all that can be urged in favour of the Embankment site, and beyond contest I think it has appeared that the greatest convenience of position is found in the Carey-street site. But hitherto very little has been said as to the convenience of the levels, and yet here again the Carey-street site has very great advantages. A slope of 12 feet from north to south in a space of 500 feet, is one which presents no serious difficulties in arrangement. It gives the advantage to the Judges of being able to enter the building at such a level that they will only have to rise to the level of the bench, the same height that most of them rise whenever they go to the drawing-room of the Athenæum Club, an ascent which Sir C. Trevelyan knows is not very formidable. This slope of the ground being so very moderate, I am able to make all the internal streets or quadrangles throughout the building on the same level as the Strand; and so, with the greatest economy in construction, I am able to say with no little satisfaction to those who are to occupy and use the building, that there is scarcely a working room throughout its whole extent which is in the basement. If you contrast this statement with what must happen on the Embankment site, you will see the very great disadvantage under which the latter lies. On its western side, in a length of about 450 feet, the rise is 35 feet 6 inches, and the rise from north to south is nowhere less than 30 feet. Now, one of two things must happen where there is such a rise as this. Either an enormous basement story must be constructed at vast expense, in order to raise the whole building to something like a uniform level; or a vast number of rooms must be provided in basements, which would not only be very inconvenient as regards light, but equally as regards access. I presume that Sir C. Trevelyan would agree with me in assuming that the building should be raised, so that its real base should be at about the level of the terrace in front of Somerset House; but if so, I hardly think he ought to have omitted to make some calculation of the enormous cost which such an erection would entail over and above what would be necessary on the Carey-street site. Something has been said about the difficulty of ascending to the court floor. But it has not been observed that if we assume the crowd of people to arrive by railway at the courts they will be set down in a station platform at least twenty feet below the embankment road level. Then, if the courts are placed as little as eight feet above the Strand they will have to rise an additional forty feet—in all sixty feet, or 120 steps of six inches each. It is all very well to talk of inclined planes, but it would be necessary for the architect to provide staircases, and, in spite of their inconvenience, people would no doubt use them rather than lose ground by following the lines of inclined planes. Another important element, in the question of fitness of the site for its purpose in the case of such a building, consists in the power which it gives the architect to design his building so as to prevent all unnecessary traffic through it, and to confine its use mainly to those whose business it is to use it. Few know how

much difficulty such a problem presents. I believe I have accomplished it for the Carey-street site, and in this way. I have made all access to offices on the exterior of the four sides of the building, so that the thousands of persons who daily frequent these offices will have no more inducement to enter the courts or central hall than, e.g., the passengers in Chancery-lane have to go into the Master of the Rolls' Court. In the next place the offices occupying in this way all the enclosing shell of the building are separated by broad streets from the kernel, in the heart of which is the central hall, round which are grouped all the courts and the rooms connected with them. The central hall is the great difficulty. If the main entrance to it were on the Strand, every one would go into it on all sorts of excuses or occasions; and if it were level with the street, or led from one street to another it would infallibly be used as a common thoroughfare. What I propose, therefore, is to raise its floor about twelve feet above the street level, to make the entrances at the east end in Bell-yard, and at the west end into an internal quadrangle, and as I make no corresponding opening through the western side of the enclosing offices, the hall will afford no such facility to the public as to lead to its being used as a short cut or a thoroughfare.

I said that, in the second place, the fitness of a site for a building depended on whether it allowed of the building being approached and seen from all sides. And this fitness the Carey-street site undoubtedly does possess. It will have broad streets on all four sides, and, as I have shown, the levels are such that the whole of the internal streets or quadrangles are level and convenient of access. It has the great advantage also that as the ground rises from the principal front in the Strand up to Carey-street the most dignified view is obtained from the Strand. Architecture, to be really grand, must be full of interest. There never yet was a really fine building which did not possess on all sides, in every part and in every detail, something that rewarded study and examination. Thus interest is excited in every part, and each inspection discovers some new beauty. So a fine building requires not only such a position as will enable its outline and grouping to be seen from a distance, but facility of access on all sides, in order to study its detail, and to get views of it from every possible point.

Now, Sir Charles Trevelyan does not feel this, apparently, and proposes that we should make a building with two grand fronts, one towards the river, another towards the Strand, but with no side streets on the east or west; and this radical defect in his proposition would involve, if it were allowed, an amount of traffic through or under the building from the Strand to the embankment which would be intolerable. There is no reason whatever why the embankment site should be saddled with such inconveniences. If it is adopted it must be, of course, with the same precautions, and the same conveniences which are required on the Carey-street site, and, fortunately, if the whole of the ground which is said to be available is so, there would be exactly room for a building and its approaches of the same size. But there is no more than just enough room; for the 76,000 feet which Sir C. Trevelyan talks of, must, unless the building is to be a complete *fiasco*, be given up at once to eastern and western approach roads similar to those which are to be provided on the Carey-street site.

Finally, it is important that the surroundings of a great building should be worthy of it; and there seems to be every prospect that they will be so on the Carey-street site. On the west the authorities of Clement's-inn propose, I believe, to build a grand row of offices of the same length and character as my western façade, and from the designs of Mr. R. Brandon. On the north another grand mass of offices is to be built, under the equally competent direction of Mr. Waterhouse. On the east Mr. Hardwick is going to make additions to the Law Institution, and we shall rebuild a pile of offices between Chancery-lane and Bell-yard, so that the new courts will stand in the centre

of a great square of new buildings, nearly all harmonious with them in character. It is a magnificent opportunity for making the greatest improvement which has yet been made in London; and, so far from the site not affording facilities, I am bound to say that it is in every respect an admirable one. No doubt an equally magnificent building could be erected on the embankment, but if I may offer an opinion, I may state that I think, looking to the curve which the river makes at this point, to the existence of a railway station on it, and to the position of the ground between the regular straight front of Somerset House and the irregular gardens and buildings of the Temple, a succession of buildings on a more moderate scale would better adapt themselves to the site, whilst several streets leading from the Strand would better serve the necessities of traffic than one. I cannot doubt that, whatever is done on the embankment will be worthy of its magnificence; and that if it does not secure the new courts of justice, some means may still be found to save it from anything which will ruin its effect. If, however, the result of the discussions on the subject were to be the removal of the courts to the embankment, I would suggest, as a necessary condition, that the Metropolitan Railway Station should at the same time be removed to the front of the Temple-garden, where it would be equally convenient, and where it would ruin no great public building.

Sir CHARLES TREVELYAN said, with regard to the difference of level between the Strand and the Embankment, the difficulty had been got over in the case of the Adelphi and Somerset House, and, with the experience thus afforded, *a fortiori* better arrangements could be made in future. The substructure of Somerset House was merely a sub-structure, the arches having been converted to use by means of artificial light and ventilation, simply from the great necessity for additional accommodation; but, when built specially for the purpose, the basement of the new courts could be so arranged as to afford every necessary accommodation. Mr. Street was mistaken in supposing that he intended to put all the law offices in the basement. He proposed to provide there for jurors, witnesses, the post and telegraph, lost property, cause lists, commissaires, refreshments, lavatories, &c.; and only for so much of the offices as Mr. Street proposes to place in the basement, as shown in his plan No. 3, which had been approved by the Commissioners. This would be so much space saved, as Mr. Street had provided accommodation for these objects above the level of the Strand. The stamping of legal documents, which forms part of the legal business of the country, might also be advantageously conducted in the same locality, so that when the solicitor's clerk has obtained his writ, or other legal document, he may go down-stairs at once and have it stamped without delay. He conceived, therefore, that the difference of level would really be a cause of economy and convenience, especially as it would enable the courts and offices to be put on the level of the Strand. He took an entirely different view of the central court from that entertained by Mr. Street, believing that its appropriate use was to act as a safety-valve, to prevent the over-crowding of the courts themselves, and to be a general rendezvous for barristers, solicitors, clients, witnesses, &c., as Westminster Hall had been from the time of the Plantagenets. Complaints were made of the courts at Westminster being crowded, but not of the Hall, and every reader of Pepys knows what a general resort it has always been for the transaction of business.

Mr. STREET remarked that he did not object to the use of the central hall for such purposes, which were quite legitimate, but to its being made a thoroughfare or short cut from one place to another by people who had no legal business on hand.

Sir CHARLES TREVELYAN said that in the Four Courts, Dublin, *La Salle des pas perdus* in Paris, and in the Parliament-house, Edinburgh, the hall was on the ground-floor; and he did not see why the courts or the central hall should be made less convenient than they would naturally be; and it would evidently be a

source of economy to be enabled to provide for witnesses, juries, parties, &c., below the level of the Strand, inasmuch as the room obtained below was saved above. The idea of traffic through the structure was altogether inconsistent with his plan. There would be a public approach to the Strand from the Embankment at Wellington-street, and another at the eastern end of the new law courts, through their basement at Essex-street; but the carriage entrances to the courts themselves would be entirely private, one on the Strand, and the other on the river front; arrangements could easily be made to prevent these from being used as public thoroughfares. There would also be an entrance on the Somerset House side which would be, as regards carriages, a *cul-de-sac*, terminating in a flight of steps towards the Embankment. On the Temple-bar side there would be another private entrance. There would be merely a private way from the Temple on one side, and from King's College, or new Lincoln's-inn, on the other. For the public it would be quite sufficient to have two north and south communications between the Embankment and the Strand, one at Wellington-street, and the other through the basement of the new building into the Strand, and so on northwards to Holborn, and, through Bedford-row, to the North Western, Midland, and Great Northern Railway stations. The Metropolitan Railway station, which at present was designed to occupy a place in front of the centre of the new building, would be removed two hundred feet to the eastward, and be placed opposite the steam-boat pier and the Embankment end of the northern lateral communication, and would be built against the terrace, forming part of one architectural design with it.

Mr. STREET thought the constant passage of vehicles through the covered way would occasion a very unpleasant noise and vibration in the building.

Sir CHARLES TREVELYAN said the roadway would not be paved with stone, but with Seyssel-asphalte or wood, so as to deaden the sound; this plan was successfully acted upon in Paris. The rise would only be 1 in 30, which was less than the rise from Charles I. statue to St. Martin's Church.

Mr. STREET observed that as there were 32 feet to rise, and only about 500 feet length of road, the real rise would be less than 1 in 20.

Sir C. TREVELYAN replied that the distance from the crown of the Embankment road to the crown of the Strand road is 850 feet, and the difference of level between these points is 28 feet. This gives a rise rather more favourable than one in thirty.

The CHAIRMAN remarked that 1 in 30 was the Parliamentary gradient allowed for roads over railways. Sir Charles Trevelyan seemed to assume that King's College and Somerset House would be appropriated for legal chambers; and as this seemed a very material part of the scheme, he should like to hear the data on which the supposition was founded.

Sir CHARLES TREVELYAN said the only thing he assumed was that the courts would be placed on the Embankment; all the rest would follow. As the rise in the value and importance of Lincoln's-inn had followed the establishment of the Court of Chancery in its midst, *a fortiori* the concentration of all the Courts—Equity, Common Law, Probate, Divorce, Admiralty, and Bankruptcy—would lead to still more striking results in the same direction; and the members of Gray's-inn, which had been pronounced by Mr. Field to be dead, would be glad to see it revive on the Carey-street site, immediately adjoining to the new courts.

The CHAIRMAN inquired what provision was to be made for the public departments which at present occupy Somerset House?

Sir CHARLES TREVELYAN said that for more than two years he assisted upon a Commission, appointed by Lord Russell's Government and continued under Lord Derby's and Mr. Disraeli's, the object of which was to arrange for the concentration of the public offices in connection

with the Houses of Parliament. The report was presented last autumn, and it provided, in his opinion, very satisfactorily for accommodating at Westminster the whole of the public offices, with the exception of the Inland Revenue. At the present moment, a considerable exodus was going on from Somerset House, the greater part of the building being occupied by the Admiralty, which was now migrating to Whitehall. The Inland Revenue department was principally, if not entirely, located in the western wing, which was apart from the rest of the building, and could easily be entirely separated from it.

The CHAIRMAN asked if the Concentration Commission contemplated the vacating of Somerset-house, with the exception of the Inland Revenue Department.

Sir CHARLES TREVELYAN said the instructions to the Commission did not include any provision for the Inland Revenue Department. But a plan which had been germinating for some time in the minds of the more advanced class of public officers was now likely to take effect, namely, that the superior direction of the Customs and Inland Revenue should be consolidated at Westminster, leaving the establishment in Thames-street to conduct the business of the Port of London, on the same footing as the Custom House at Liverpool, all the Commissioners of the two Boards being fused into one supreme direction, with secretaries, and, possibly, a deputy for the Inland Revenue and another for the Customs. It was evident that a great saving of money, and increase of efficiency would result, and that so important a financial department as this would be could only be satisfactorily conducted at Westminster, under the immediate control of the Chancellor of the Exchequer. The stamping of legal documents, as he had before remarked, might, with advantage, be carried on in the basement of the new law courts.

The CHAIRMAN asked if there was a probability of the Inland Revenue Department being removed from Somerset-house, irrespective of any question of the new courts, or the removal of Lincoln's Inn.

Sir CHARLES TREVELYAN thought there was a great probability; but even without the removal of that department there would still be plenty of room for Lincoln's Inn at Somerset-house. On the site of King's-college alone, taking it from the Strand to the river, with the improved modes of construction now adopted, central staircases, lifts, telegraphic bells, &c., there would be accommodation for the whole of Lincoln's Inn. Then there would be the noble quadrangle of Somerset-house; and the hall, library, &c., would be much pleasanter facing the river than in their present situation. The chapel of Lincoln's Inn was a very inferior building, to which no one attached much importance, and a handsome new chapel might be built at the Embankment end of the King's-college site. Then, in addition, there would be the unfinished northern front of Somerset-house from the corner of Wellington-street to the commencement of the new law courts.

The Right Hon. Wm. COWPER, M.P., remarked that for that purpose it would be necessary to buy the houses facing the Strand.

Sir CHARLES TREVELYAN said the property belonged to the Duchy of Cornwall, and would be of much greater value if converted into shops below and chambers above than as at present.

Mr. GREGORY, M.P., asked if it were absolutely necessary that the carriage communication between the Embankment and the Strand should pass through the building.

The CHAIRMAN understood that it would be only partially under the building, with an open arcade facing the Temple-gardens.

Sir CHARLES TREVELYAN said he proposed that it should be more or less open; but this was a matter for architects to determine; he was sure it could be done in some way.

Mr. STREET said he never disputed that it could be done.

Sir C. TREVELYAN contended, not only that it could be done, but that it would be both a great public convenience and a public ornament.

Mr. FIELD inquired how the road would be lighted.

Sir C. TREVELYAN said it might be lighted from either side, but he presumed the Temple side would be preferred.

The CHAIRMAN said that evidently, whatever rooms could be built over the roadway, which, of course, would be fewer at the Strand end than the other, would be so much space saved.

Sir C. TREVELYAN remarked that the two great objects which he had in view were to provide a good thoroughfare for the convenience of the public going from the Embankment to Holborn, and so on, through Bedford-row, to the three great northern railways; and, at the same time, to allow the Templars to pass on a level to and from the new courts, which they could do at Fountain-court.

The CHAIRMAN inquired whether there would be any architectural difficulty in making such a road.

Mr. STREET said it would be difficult, but not impossible. His objection to such a plan was, that a considerable expense would be incurred for no adequate reason. The street could only be lighted on the side, as Sir Charles Trevelyan proposed to raise the internal streets to the level of the Strand; it would occupy the ground-floor of one side of the building from N. to S.; and would be open to the objections of, and very similar in use to, the arched street under the Adelphi. With a building 500 feet long there would be an immense number of party walls, which would require very strong arches to support their weight, so that the expense entailed would be enormous; and, in spite of the Chairman's view, any practical architect would tell him that the space really gained would be next to nothing. Moreover, they had no right to assume that the Temple would allow them the privileges as regards light, which Sir Charles Trevelyan assumed by proposing to build up to his boundary line. The best architectural arrangement would be a wide road, such as would be required, with a bridge across to the Temple if necessary. There would then be no difficulty about light or access.

Mr. TEULON remarked that an experiment had been tried, under very nearly the same conditions, at the Charing-cross hotel. At the further side there was a carriage entrance passing through the building, which was paved with wood, the greatest care being taken to so pave it as to avoid vibration as much as possible, but it was all to no purpose, and the noise and vibration were infinitely less from vehicles passing over the stones in front of the building than in going through the wooden-paved passage, in which case they were plainly perceptible up to even the third floor.

Sir C. TREVELYAN said that, early in life, he had been strongly impressed with the beauty of this mode of architecture in the case of the arcade at Delhi, and he had admired it more than ever when he saw it again a few years ago. He must defend the Embankment site against the attempts which were made to dismember its territory, and he therefore protested against the idea that there was any necessity for a road at the western extremity. The one at the eastern end could be made without interfering with the building. It would be in the most convenient situation for the public midway between Waterloo and Blackfriars bridges.

Mr. STREET observed that Sir Charles Trevelyan assumed throughout that King's College and Somerset House were to be obtained, and they ought to have been coloured on his map. He was glad that they now distinctly understood that Sir Charles Trevelyan proposed to raise the whole of the internal streets to the level of the Strand, which would be an artificial elevation of 30 feet.

Sir CHARLES TREVELYAN contended that, if the law courts were built on the proposed site, all the rest would follow; there would be no expense incurred in the con-

version of Somerset House and King's College into chambers for barristers; on the contrary, it would be a very profitable investment. Nothing paid better than building improved barristers' chambers and solicitors' offices, with the exception possibly of offices in a few choice spots in the heart of the City. He had no doubt that the Society of Lincoln's-inn could borrow the money on the security of the buildings at 4 or 4½ per cent., and that that there would be a return of 8 or 10 per cent. He spoke from having inquired into the rentals of various sets of chambers in the Temple and elsewhere.

Mr. EDWIN FIELD remarked, in reference to the proposed arcade, that he understood one of Sir Charles Trevelyan's objects was that the Templars might walk into the courts on a level, but if the courts were on the level of the Strand, and the arched road led up to the same level, there must necessarily be an ascent and descent to cross the road.

Sir C. TREVELYAN thought there might be a level crossing at Fountain-court.

Mr. STREET said Fountain-court was only 12 feet below the level of the Strand.

Mr. E. FIELD said that all the difficulty would be avoided by having the courts on the first floor, which was the only proper place.

Sir CHARLES TREVELYAN said this would increase the difficulty as to the level, because the Templars, as well as the judges and everybody else, would have to climb so much higher to get at the courts:

The CHAIRMAN remarked that this question of the arcade or open road was only a subsidiary one, and might easily be arranged when the site had been decided upon.

Mr. COWPER said he thought there must be a street at the western end in order to get light and air. They could not open the windows directly on to King's College; and although it was part of the scheme that King's College should be pulled down, he did not know whether allowance had been made for the necessary vacant space.

Sir CHARLES TREVELYAN said there would be plenty of room on the King's College site for light and air, still leaving sufficient building space to pay well for the expense of alteration. On the aesthetic aspect of the question he should like to make one or two remarks. Mr. Street appeared to object to any solid structure on the Embankment site, as he thought it would not harmonise well with Somerset House. But there were three elements to be considered, Somerset House, the Embankment site, and the Temple. Now the Temple buildings were of a particularly open character. He had suggested that the terrace of Somerset House should be extended to the end of the Inner Temple, and he understood that designs were being made for the extension of Paper-buildings, Harcourt-buildings, and Plowden-buildings down to the terrace, with ornamental façades fronting the Thames. In order to appreciate the true character of this part of the plan, he would suggest that the members of the Committee should view the site from the Temple Gardens. Looking upwards, they would see the hill crowned with a diadem of towers, the beautiful lantern tower of St. Dunstan's, and the tower of the Rolls; and, turning to the westward, supposing the new building were placed on the Embankment site, there would be the towers of Mr. Street's beautiful structure. Of these three elements, therefore, the Temple at the east-end was laid out in an open style, while Somerset House at the western end was built on a solid principle; and, no doubt, if the courts were built on the intervening space, Somerset House would be raised a story, and would become a more imposing building.

There remained the question how the Embankment site was to be laid out, and on this he would quote a passage from Mr. Whitmore's interesting letter. "In truth, take it how you will, it is really a question for posterity. Few of us who are now battling it, can hope to see the judicial work of the country, or hear future trials between Saurins

and Starrs, in either of these localities. The elderly gentlemen who are so animated in the solicitor's statement will be gone, and, alas, unremembered, when this mighty fabric is reared and occupied; but their successors will have to criticize their acts and opinions. And what will those successors—that posterity—say? I wish that others like myself, were called upon to traverse the bridges that span our river between Westminster and Blackfriars. From either of these let anyone with a grain of intelligence, with a particle of taste, look upon the gap now dividing Somerset House and the Temple. Let him figure to himself this gap filled up with some appropriate continuation of Somerset-house facade, or, on the other hand, cut up into fragments, and filled with inharmonious specimens of private speculation, and what conclusion will he arrive at?"

The only remaining point was as to the shops. If the courts were placed on the Carey-street site, he agreed that it would be improper to interpolate shops into the building, because, there being, in this case, only one facade, it ought to be preserved for purely public objects. On the other hand, if the courts were placed on the Embankment site, there would be two handsome facades, the one fronting the river being much grander than that towards the Strand. No one would propose that the river front should be occupied in any other way than by architecture in the fine old English style, which would carry the mind back to Coke and Magna Charta. The eminently commercial character of the Strand, however, might well be preserved, both in the interest of beauty and utility, by the construction of shops below and chambers above. Upon this point he would quote the *Quarterly Review* for July, 1867. He did not know who was the author of the article, but it was written before any idea had been raised of altering the site from Carey-street to the Embankment:—"On this front then we would place a range of really noble houses, with shops, all life and utility, along the street; their upper stories (which might contain chambers and legal offices), enriched with delicate and varied work, and all crowned with those picturesque gables which would give us the only skyline fit for a London street, and the restoration of which is as essential to the very beginning, as to the completion of a revival in our street architecture. Let any one who doubts it give one look at the few gables still left us in London, or those at Rouen, Hanover, Frankfort, or on the Grande Place at Brussels. Such a varied line of distinct houses designed, not with symmetry of form and detail, nor yet without suitable combination and consistency of effect, if entrusted to a dozen or score of our best Gothic architects, might be made so charming a display of the beauties and capabilities of our native English style, that a swift and sweeping revolution of our street architecture would be the inevitable result." The Strand front of the law courts on the Embankment site was Mr. Street's domain, but there would be abundant scope for the genius of other architects on the other side of the Strand, and on both sides of the street between the Strand and Holborn and the three northern railways.

Mr. S. REDGRAVE said that mention had been made incidentally of raising Somerset House a story; he should strongly object to any such arrangement.

Sir CHARLES TREVELYAN said he did not propose it, but he believed it would be done. The only objection made by Mr. Pennethorne was that, although the walls looked so solid, green timber had been used in them. The original design of Sir William Chambers seemed to require that there should be another story; and now that the basement had been raised by the Embankment, the building was, in fact, dwarfed to that extent.

Mr. FIELD was quite sure that if Somerset House were given in exchange for Lincoln's-inn, unless a Parliamentary restriction were imposed, it would be raised immediately not one but two stories; particularly as the new building could only be surrounded by chambers on

three sides. The need for chambers would necessitate such addition of stories.

Sir CHARLES TREVELYAN said there was a large available space on the northern or Strand front of Somerset House, and he thought that the public interests might safely be entrusted to the Society of Lincoln's-inn, for, in their new hall and library, they had shown that they were capable of meeting every artistic requirement.

Mr. STREET said he was not responsible for the level, which was decided by the Commission, but he might mention that the *Salle des pas perdus* at Paris was on the first floor, 20 or 25 feet above the ground.

Sir CHARLES TREVELYAN said there was a double objection to the plan as imposed upon Mr. Street by the Commission, for not only was the central hall on the first floor, but the courts would be one story higher.

Mr. STREET said he believed the floor of the courts would be as nearly as possible on the same level as that of the courts in Paris.

Mr. W. H. GREGORY, M.P., said the Four Courts in Dublin were on the basement floor. There was always a considerable concourse of people there, but it was no impediment to the barristers conducting their business. There were no loungers there, but there was a considerable amount of traffic.

Mr. FIELD said he had spent some weeks in attendance there, but it was one of the worst places in the world for witnesses; there was a constant draught. People could not stop in it in cold weather.

Sir CHARLES TREVELYAN remarked that the nave of old St. Paul's had been a constant place of resort for similar purposes. He did not think that a great national building ought to be so arranged as to afford as little accommodation as possible to the public. With regard to the widening of the Strand, it seemed to him equally necessary or unnecessary for either plan; it was a quantity common to both. He thought it was necessary to both plans; others might deem it equally unnecessary. If anything, it was more necessary for the Carey-street, than the Embankment site, because the Carey-street site had no other good approach, whereas the Embankment site had a far better one, in addition, on the Embankment.

Mr. FIELD could not agree to that. There was only a distance of 22 feet from the churchyard to the wall of Sir C. Trevlyan's proposed building, and if the churchyard were thrown into the roadway there would be but 42 feet. On the other side there was plenty of room.

Sir C. TREVELYAN said that the distance from the southern side of the courts, on the Carey-street site, to the railings of St. Clement Danes churchyard, with which the Commissioners did not propose to interfere, was 40 feet; and even this was obtained only by setting back the opposite portion of the building. The distance from the northern side of the courts, on the Embankment site, to St. Clement Danes Church was 50 feet, and this might be increased by setting back a portion of the opposite building in a similar manner. Sir C. Trevlyan proposed that the roadway should be carried close to St. Clement Danes Church, as in the case of the adjoining church of St. Mary-le-Strand.

The CHAIRMAN said he had understood Mr. Street to give, as one reason for preferring the northern side of the Strand, that the southern side was much more crowded; but did not that arise from want of convenient access to the north side? Would not the contrary be the case if Holywell-street and the slums were removed, and a convenient access made from Holborn?

Mr. STREET believed that the embankment would be a constant feeder to the south side of the Strand, which would, in consequence, always be the most crowded. One side of most streets was constantly found more crowded than the other.

The CHAIRMAN said that probably there was always some good reason for such a state of things, and he did not think the present state of the Strand was any criterion of what it might be under different conditions.

Mr. STREET said that no doubt it would be a great metropolitan improvement to take away the block of buildings between Holywell-street and the Strand, but it was not in the least degree essential to his scheme. But such a building as Sir Charles proposed would not really be seen unless the Strand in front of it were widened. On the other hand, the natural configuration of the Strand from Temple-bar to St. Clement's Church afforded ample room for seeing the buildings on the Carey-street site.

Sir C. TREVELYAN said that, whatever the width of the Strand might be, it would afford equal advantage for seeing the buildings on either side of it.

Mr. GREGORY remarked that a statement had been made that if the Carey-street site were not appropriated as proposed, a loss would be entailed of £400,000, which was nearly half the value. He should like to know how that fact was supported.

Sir C. TREVELYAN entirely repudiated such an idea. Anyone who possessed any knowledge of the value of such land must know that such a statement was inaccurate. The cost of the Carey-street site was only £800,000, and the Council of the Law Institution assumed that there would be a loss upon that of £500,000. He was convinced, from the inquiries he had made, that chambers might profitably be built upon that site. Such investments in the Temple, in Chancery-lane, and elsewhere in the neighbourhood, had proved eminently successful, and he had no doubt that capitalists and builders would be found to take the ground off the hands of the Government at the same price which had been given for it.

Mr. FIELD said the Government surveyor, Mr. Pownall, who had been concerned in the purchase of this site, had written a letter, in which he stated that from the expense of laying out new roads for rebuildings, and otherwise dealing with the land, the loss would be, in his opinion, at least £500,000. He thought all persons must be guided by such an opinion as that.

Sir CHARLES TREVELYAN said Mr. Pownall, when he made that estimate, could not have had present to his mind the supposition that the New Law Courts would be placed exactly opposite the Carey-street site.

Mr. TEULON said he had formerly had considerable experience in the purchase and resale of property, particularly when he was on the Board of the South Eastern Railway Company. He believed the loss in connection with St. Thomas's Hospital was about £300,000. That of course was in a different situation; but with reference to the Charing-cross Station, they had estimated that the arches under the station would let for 5 per cent. on the outlay, but in the result it was needless to say that this proved quite fallacious, and very few of them indeed had been let at all.

Sir C. TREVELYAN said that everything depended upon the situation. The rents obtained from chambers in the Temple and elsewhere showed how extremely profitable this investment is.

The CHAIRMAN said, putting Mr. Field's objections aside for a time, and putting all the lawyers, suitors, and witnesses out of sight, he should like to ask Mr. Street a question with reference to the architectural improvement of London. Taking it for granted that a building on the Carey-street site would have a greater architectural effect on London at large, he would ask supposing the choice simply rested, as to the aesthetic improvement of London, between the Carey-street site and the Embankment, and supposing always that the former would be covered with improved buildings, such as Sir Charles Trevelyan suggested, supposing also that if the new courts were not placed on the Embankment, no other public building would be erected there, and that in the words of Mr. Whitmore, the Embankment would be cut up into fragments and filled with inharmonious specimens of private speculation—in such a case which would be most for the improvement of London, that the Embankment should be left as Mr. Whitmore described

it, and that the new courts should be erected according to the present plan, with towers rising high above the surrounding buildings, or that the new hall of justice should be transferred to the Embankment? He put the question entirely disregarding any question of expense.

Mr. STREET said he should like to know first of all whether that was the only alternative.

The CHAIRMAN said he wished an answer first to the question as he had put it. He wished Mr. Street to assume that there was no alternative; that the question as to the embellishment of London was between the beautiful towers they had heard of on the Carey-street site, and the transfer of the law courts to the Embankment.

Mr. STREET said that, supposing the question lay between putting any great public building on that site, and allowing every little landowner to put up whatever unsightly building he thought fit, he should say unquestionably it would be very much better to put the public buildings there, but he could not admit for an instant (especially since the action which Lord Elcho had taken with reference to the Embankment westward of Waterloo-bridge) that the country would ever tolerate that that part of the Embankment should be dealt with as if it were mere private property. True, two or three sessions ago an act had been passed authorising a railway station on the Embankment, which would be, in his opinion, quite destructive of its beauty, and this had operated very strongly on his mind in considering the question of the two sites, but he hoped some alteration might yet be made in the arrangement, as, at present proposed, it appeared to him to be quite fatal to the use of the Embankment site, unless Parliament interfered to alter it.

Mr. COWPER believed the greater part of what was called the Embankment site was in the hands of the trustees of the young Duke of Norfolk, and it was not likely that they would allow any ugly or inappropriate buildings to be erected upon it.

Sir C. TREVELYAN said the remaining portion belonged to three proprietors, one of whom was a timber merchant, who had informed him that, previously to the commencement of this discussion, he had intended to do away with his timber-yard, and build three houses.

Mr. FIELD said he conceived the work of the Committee had now proceeded so far that it was time to ask what was the question they had to determine. The question was very simple. The Chairman had, playfully and temporarily, Sir C. Trevelyan had, seriously and permanently, proposed to put the suitors in the basement of Somerset House in order to deal with the decoration of London. Was it right and fair that these jurors, witnesses, and so on, should be put into a place like the basement of Somerset House at a great expense, and that the suitors should pay for it? That was the real question, and he trusted the Committee would give a plain answer to it. He was perfectly satisfied in his own mind that somewhere or other there was a property or compensation interest at work at the bottom of this movement. He had reason to believe that large funds were forthcoming if necessary; and they had been led to understand from Sir Charles Trevelyan that he had been favoured with professional assistance. He did believe that somewhere or other there was a money vendor interest at the bottom, and that it behoved the Committee of a Society of such importance, antiquity, and social value as the Society of Arts to be very careful that they were not made catpaws of by any such parties. Sir Charles Trevelyan took up the scheme under what he might venture to call a sort of architectural intoxication. Several passages had been read from Mr. Whitmore's letter, and he would venture to add to that a few words he had just received from a gentleman who was not long ago treasurer of the Inner Temple, who had filled some of the highest offices in the law, and who, from his varied experience, having risen from the ranks, was singularly well qualified to express an opinion upon

the subject. He had been a lawyer's clerk, and was therefore well acquainted with all questions of legal convenience, and had also been a member of the Commission, and thoroughly appreciated the importance of putting the law-courts in the very centre of the law district. It was a private letter, but there was one short incidental passage bearing on this subject:—"With the law courts in hand, I should not have troubled you with a private letter, but you have invited it. I fear that between patriots on the one hand, and scheming and opinionated *dilettanti* on the other, the law courts, and suitors' fund, and the interests of the public will go to the wall." He named the writer to the Committee, and urged that when such competent judges spoke in this way every nobleman and gentleman, and especially all members of parliament, ought not to do anything to force the suitors to pay for that which would be of no value at all to them. It was useless to disguise the fact, the scheme which the Committee was invited to give its sanction to, had for its object to decorate the metropolis at the expense of the suitors, than which nothing could be more unjust. He was sorry to see there were members of parliament who seemed inclined to take this view of the subject, that there was an important metropolitan improvement, which the public would not pay for; but as a building was required for the administration of the law, which the suitors would have to pay for, they should be told if they did not abandon the site which had been already selected, and go somewhere else at a great additional expense, they should not have what they wanted at all; and that this was done in the hope that rather than that they would accede to the terms proposed. Then it was said that those who had advised the suitors were ignoramus, and that experts (which meant those who knew nothing whatever about it) were the people who should give instructions what should be done. He did not think Sir Charles understood the difference between the chambers of counsel and the offices of solicitors; it was the former which it was so important should be immediately contiguous to the courts. It was true, as he had said, that Gray's-inn was dead as an inn of court for barristers' chambers, but it was not to be thence inferred, as it had been by Sir Charles, that Bedford-row and all the neighbourhood was obsolete as a place for attorneys and solicitors. It was essential to the speedy transaction of legal business that the chambers of counsel should be within bell-pull of the courts; and in order to obtain this on the Embankment site it would be necessary to go through all these wonderful transformation scenes which they had heard so much about, and which no one would ever see the end of. He hoped such a scheme would not receive the sanction of the Committee, particularly when there was £30,000 being wasted per annum merely for the rental of the ground which was lying idle. He had been invited to become a member of this Committee, and in doing so his only object was to protect the interests of the suitors and of the public against what had been described, by the authority which he had quoted, as the schemes of opinionated *dilettanti*. He did not propose to say anything on the artistic side of the question, but having lived all his life amongst artists, from the time of Fuseli, Stothard, and Flaxman, he had not been able to avoid forming artistic opinions for himself. He believed there was one infallible and invariable canon in architecture—that the highest art was the highest utility most nobly clothed. Let it once be proved that the Embankment was the most useful site, and he would take it as a thing incontrovertible that upon that site could be raised the grandest architectural design. If they went to work as Sir C. Trevelyan's scheme proposed, they would be beginning from the outside and working inwards, putting the building there first, because they wanted to fill up the Embankment, and then forcing inside that building the suitors and all connected with the bar, which was just like an army clothes' man

making the uniform first and then padding the man to fit it. Of course he did not attribute any of the interested motives to which he had referred either to Sir Charles Trevelyan or to any member of the Committee, but he believed there were others behind them—wire pullers—who were in a different position.

Sir CHARLES TREVELYAN said if he explained the nature of the advice which he had taken, it would be a sufficient answer to Mr. Field's imputations. He had consulted all sorts of people, barristers—several of whom were among his friends—solicitors, surveyors, and architects, and he did not know where else he should seek advice. The gentleman who had given him the greatest assistance in all that concerned architectural and land measurement details could not possibly, from his position, have the slightest interest in the scheme. He was a draughtsman in a public office, on a salary of £500 a-year, although, from his genius and ability, he deserved a great deal more. Sir C. Trevelyan, however, entirely repudiated the idea that architects and surveyors, or even capitalists and builders, were necessarily influenced by sinister motives. This objection seemed to have been founded upon the idea which he had put forward, that a profit would be derived from the building of new chambers and offices in suitable situations, but on this point he had consulted chiefly solicitors and barristers, architects scarcely at all.

Mr. HYDE CLARKE said he had heard the sort of stories to which Mr. Field had alluded, but he had not been able to trace any solid foundation for them, and the Committee must not, from a groundless fear of being made tools of, overlook the importance of the question.

Sir CHARLES TREVELYAN again denied that there were any improper influences at work. He had been twice assured by Mr. John Abel Smith, one of the trustees of the Duke of Norfolk, that if the site were required for public purposes no unnecessary obstacles would be thrown in the way, nor any attempt made to obtain more than a fair amount of compensation.

Mr. GREGORY said he had received very numerous communications on this subject, many of which contained similar insinuations to those which had been referred to, but he had never paid any attention to them, because he felt that if dirt were thrown on one side it would on the other, and, therefore, they ought to confine their attention to the main principles of the question.

The CHAIRMAN thought that, after what Mr. Field had said, it was only due to the Committee that he should repudiate the notion that, so far as they were concerned, there was any such influences at work as had been suggested by Mr. Field. He denied this in the strongest terms. For his own part, he could only say that he had long ago given up any idea of seeing London improved, and had quite made up his mind that the embankment was going to be a bungle, when his attention being accidentally called to another part of the embankment, he had felt it his duty to introduce a deputation to Mr. Layard, and a Committee of the House of Commons had subsequently been appointed on the subject. Then Mr. Cole, who took an interest in this matter, proposed the formation of this Committee, and he had been invited to become a member of it. Soon afterwards, happening to meet Sir Charles Trevelyan, he was made acquainted with his scheme, of which previously he had been quite ignorant, having not even read the reports of the Commission. He thought Sir Charles had thoroughly investigated the subject, and that his proposal would tend to vastly improve a large portion of the metropolis, and *prima facie* it appeared that even *qua* the lawyers, if Somerset House and King's College were appropriated, everyone would be benefited, except perhaps those who had chambers elsewhere. He did not know whether the Committee would come to any definite decision, but the impression left on his mind was unquestionably that if they looked solely to the improvement of London, the plan of putting the new law courts on the Embankment

would be infinitely preferable to the other, and he had no doubt that Mr. Street would be able to erect a building worthy of the site. He thought it quite reasonable for the House of Commons to say here was a great chance which ought not to be thrown away, provided that the cost of the change of site would not be much greater, and that the inconvenience to the lawyers and suitors was not excessive. It was also to be borne in mind that those who were suitors were not so always, but were permanently members of the British public. He was not prepared to say that the new site would be inconvenient, but if it were clearly manifest that the inconvenience would be excessive, the question of improving the Embankment would have to be put on one side. On the other hand, if the inconveniences were not excessive, he himself, as a possible suitor, and as a member of the British public, would be quite content to risk the possible inconvenience, and, with a view to the embellishment of the metropolis, take what was to his mind clearly the best place and the most complete plan. These two points, the extra expense and the inconvenience, were the only possible drawbacks to the scheme. As to the architectural part of the question, Mr. Street knew perfectly well that he, or any man of genius, would be as capable of erecting a beautiful building on the Embankment as anywhere else; and as to the convenience of access, whether by means of an inclined plane or by flights of steps, these were mere matters of detail which could be easily arranged. As to the level of the courts, his own opinion was rather in favour of having them on the ground floor, as they were in Edinburgh and at Westminster, where, from his own observation during a recent celebrated trial, he did not see that any inconvenience was occasioned by the level of the courts, although he was much struck with the wretched accommodation for the jury. He thought the public ought to be as much considered as the lawyers. He did not know whether the Committee would come to any definite resolution, or whether they would pass one conditionally, subject to the question of expense, or, again, whether they would think it right to go into the question of private rights, but certainly, whatever course they might take, they would not be made the cat's-paws of anyone.

The Right Hon. Wm. COWPER, M.P., said a question of some importance had been raised as to what line the Committee should take. The Chairman rather suggested that they should only take a very partial view, and looked at what he called the dilettanti side of the question, but he did not think that such a course would be worthy of the Committee. He rather thought they ought to view the matter in its whole bearings. If they considered the new law courts to be merely an appendage to the Embankment, and if convenience and cost were to be subordinate to the embellishment of the river side, they would like to have the courts of law placed on the Embankment. He had more reason than most people for being anxious that the Embankment should be really the great ornament to the metropolis, having introduced the Act which constituted it. He thought, however, they could not take that view. He could not for a moment suppose that the courts of law were to be considered merely subsidiary to the Embankment; and if an enlarged view were taken of the architectural effect which this new building would produce over the whole of London, he could not doubt but the higher site was the better. Mr. Street had told them that some of the towers on his plan would be of the same height as the pinnacles on the western front of St. Paul's Cathedral, and would be visible wherever those pinnacles were visible. They would form striking objects of view from all the northern parts of the metropolis, from the river, and from the Embankment itself; and, although they would not be seen to so much advantage from the quay as though they stood on the Embankment, still, standing on the greater height, they would produce a similar effect to the upper portion of St. Paul's Cathedral,

so that the new building on the Carey-street site would be seen as well as St. Paul's from the Embankment, and would have the advantage of being more generally seen. Then on the next point, that of convenience. There could be no doubt that whatever advantage might be gained by putting the law courts on the Embankment would be obtained at a very great sacrifice of convenience. He would not occupy time by dwelling upon that point in detail, but the general result was that the new site would be far less convenient for the administration of the law, and for all the purposes for which it was intended, than the Carey-street site. Then came the question of finance. The peculiarity of this question was that the funds were not provided from our public revenue, but from the suitors' fund, which was a chancery fund, and from the rent of court fees, which was a common law fund. These funds were limited, and could not be extended indefinitely, whereas, if Sir Charles Trevelyan's scheme were adopted a very large additional expense would be incurred. This could not be supplied from the suitors' fund, and certainly it could not be got from Government or from Parliament. The difficulties, therefore, were undoubtedly very great, and he did not think it would be wise of the Committee to put them aside, as they were, after all, the turning point of the case. Sir Charles Trevelyan, with all the ability which he had shown in endeavouring to meet every objection, had, so far as he was aware, not stated where the additional funds were to be found which were required. He need not go into the amount, but it was evident that the cost would be much greater on the Embankment site than the other, because they would have to make a very large basement, quite equal in size to that of Somerset-house. It was said that it could be utilized for the accommodation of jurors and witnesses, and for the stamping of deeds, but the space required for those purposes would be comparatively very small; about 32,000 feet would be ample, whereas the area of the central block was 150,000 feet, leaving 120,000 feet useless, which showed that this would be a very unnecessary and costly piece of building. It was admitted that it would not do for offices, and that they did not want so much space for purposes for which it would be suitable. The expense which must necessarily be incurred for carrying out other parts of his scheme would be a million of money at least. Upon all these grounds, therefore, considering the architectural effect, the convenience, and expense, he thought they must part from this beautiful dream, for beautiful it certainly was, and they were obliged to Sir Charles Trevelyan for suggesting it. It was very pleasant, but he was afraid that it was but the baseless fabric of a vision, and they had much better do what was practicable, and do it at once, which could be done if they went on with the site which had been secured. Otherwise they must postpone their work, and their grandchildren alone would have the enjoyment of the new building.

Mr. GREGORY said there was one very important point in the remarks which had fallen from Mr. Cowper. He had said that the expense of carrying out Sir Charles Trevelyan's scheme would exceed by about a million that of carrying out the authorised plan; he should like to know on what data Mr. Cowper formed that estimate.

Mr. COWPER said King's College would have to be removed.

Sir CHARLES TREVELYAN said that would be done at a profit, because the site would be covered with chambers yielding high rents.

Mr. COWPER remarked that it was a very common thing in building arrangements for people to propose a profit before it was commenced, and for the result to turn out very different to their expectations.

Sir CHARLES TREVELYAN agreed that this was the case in reference to public buildings, but the class of structure he proposed formed the most profitable employment of capital possible.

Mr. COWPER said that people at present occupying valuable chambers would have to give them up.

Sir CHARLES TREVELYAN said it had been admitted that Gray's-inn was already dead for legal purposes, that is, it had become useless and unprofitable for legal purposes. He contended that it would be much better to sell this property in the open market, at thirty or forty thousand pounds an acre, for the erection of houses so much needed for the lower middle-class and working people who had been displaced by recent improvements.

Mr. COWPER said Gray's-inn was not occupied by barristers, and would not be affected by the proposed change.

Sir CHARLES TREVELYAN said that the Carey-street site would be principally occupied by solicitors from Gray's-inn, Bedford-row, Lincoln's-inn-fields, &c., and the barristers would chiefly settle in Somerset-house and King's College.

Mr. COWPER said, when people came to occupy chambers at King's College they must leave those elsewhere, so that what was gained in one way would be lost in another.

Mr. E. FIELD said that the rental of all the law chambers might probably be roughly taken at half a million, and if these chambers were all brought down to the Strand the rental would be but half a million still; it would not create a new rental of half a million.

Sir CHARLES TREVELYAN thought that, even supposing that the aggregate rent of the law chambers remained as at present, there would be a great increase of value in the direction of Gray's-inn, Staple's-inn, Jockey-fields, Bedford-row, and other obsolete legal settlements on either side of Holborn, owing to the changes which he proposed. These ancient establishments were so distant from the inns of court, as well as from the courts and offices of law themselves—whether in their present situation or on either of the new sites proposed for them—that the chambers had to be let at rates which, so far from allowing of their reconstruction according to the improved methods of the present day, barely maintain them in a decent state of repair; but if they were sold for any of the many general social purposes for which they are so much wanted, they would at once rise to their full market value, and the price obtained for them would be more than enough to provide a much larger amount of better and more profitable accommodation on the Carey-street site. This would be a real consolidation, not only of the courts and offices of law, but also of all that portion of the legal profession which ordinarily practises in them, and this consolidation would be obtained, not only without pecuniary loss, but with great pecuniary profit.

The Committee then adjourned.

SIXTEENTH ORDINARY MEETING.

Wednesday, March 31st, 1869; The Rev. W. ROGERS, Member of Council, in the chair.

The following candidates were proposed for election as members of the Society:—

Abraham, Philip B., 6, Old-square, Lincoln's-inn, W.C.
Andrews, James, 10, Northampton-park, Islington, N.
Arnott, Neil, M.D., F.R.S., 2, Cumberland-terrace, Regent's-park, N.W.
Clare, Edwin, 104, Guilford-street, Russell-square, W.C.
Cockerell, G. J., Upper Sydenham-hill, Kent.
Death, F., Woodstock-house, Hendon, Middlesex.
Fowler, William, 30, Lombard-street, E.C.
Gwynn, William James, Manor-house, Forest-hill, S.E.
Hambro, Charles J. T., M.P., 14, Cavendish-square, W.
Haynes, W. J., 9, Westbourne-villas, Forest-hill, S.E.
Kemp, Edward Owen, 7, Lincoln's-inn-fields, W.C.
Lascelles, W. H., 121, Bunhill-row, E.C.
Layard, Right Hon. Austen Henry, M.P., 130, Piccadilly, W.

O'Neill, Lord, 19, Belgrave-square, S.W., and Shanes Castle, Antrim.

Pegram, Orlando A., 13, King-street, Cheapside, E.C.
Rabbits, W. Thomas, Selwood, Mayow-park, Forest-hill, S.E.

Ricketts, Charles R., 13, Albert-road, Regent's-park, N.W.
Seabrook, Charles, Grays, Essex.

Smith, George Mence, The Chesnuts, Bexley Heath.

Waterford, O. C., Temple-grove, East Sheen, S.W.
Weguelin, Christopher, M.P., Ranelagh-house, Arabella-row, S.W.

The following candidates were balloted for, and duly elected members of the Society:—

Airlie and Lintrathen, Earl of, K.T., Airlie-lodge, Campden-hill, W.

Cadogan, Earl, P.C., Chelsea-house, Cadogan-place, S.W., and Nascoff-house, Watford.

Collier, Sir Robert P., M.P., Attorney-General, 1, Mitre-court-buildings, Temple, E.C.

Collyer, Colonel George C., R.E., 57, Kensington-gardens-square, W.

Croft, Sir Herbert G. D., Bart., M.P., Oxford and Cambridge Club, S.W.

Cromwell, Rev. J. G., St. Mark's College, Chelsea, S.W.

Denison, Edward, M.P., New University Club, S.W.

Dodds, Joseph, M.P., Reform Club, S.W.

Egerton, Hon. Wilbraham, M.P., 67, Lowndes-sq., S.W.

Exeter, Marquis of, P.C., Engine-court, St. James's-palace, S.W.

Forster, Charles, M.P., 15, Great Queen-street, Westminster, S.W.

Hall, Arthur, 35, Craven-hill-gardens, W.

Henry, J. Snowden, M.P., 142, The Terrace, Piccadilly, W.

Lancaster, John, M.P., 6, Strand, W.C.

Lusk, Alderman Andrew, M.P., 64, Westbourne-ter., W. Northbrook, Lord, Stratton-park, Winchester; and Manor-house, Lee, S.E.

Russell, Earl, K.G., F.R.S., 37, Chesham-place, S.W.

Wright, Philip, 3, Kidbrooke-terrace, Blackheath, S.E.

The Paper read was—

TECHNICAL EDUCATION AS APPLIED TO FEMALE SCHOOLS.

By ELLIS A. DAVIDSON, Esq., Science and Art Lecturer to the City of London Middle-Class schools.

Having some time ago had the honour of presenting to this Society a paper on "Technical Education," I have thought that a short essay on its application in schools for females might not be deemed out of place, especially as the subject has received so very little attention in this country.

The encouragement given to the promotion of Technical Education in secondary schools, and the daily increasing feeling that the instruction in primary schools is not of a character to be of real service to the pupils in after life, lead to the hope that an alteration in our educational system is at hand, and it is in order to open up the subject for discussion, with the view of obtaining for the female portion of our population the benefit of any such improvement that I have ventured on my present task.

All who have been present at the Educational Conferences recently held, must have heard the constantly repeated question—"What is Technical Education?", and I therefore think it will save repetition of this, if I state at the outset, that by this term I understand that systematic training in the sciences on which the practical arts are based, and that in its broader and more comprehensive sense it means a sound and useful education, such as shall fit the pupil for the active duties of life, in opposition to the theoretical and mechanical routine which so often forms the sum total of the education given in our schools.

If this view of Technical Education be admitted, it follows that the earlier it is begun the better; that

questions which may be of practical use in daily life should take the place of the fabulous problems in arithmetic, &c., so often given; and that at least the soil should be broken up and prepared to receive the seeds of scientific instruction. However early may be the age at which the pupil is withdrawn from school, certainly the education may, from the very first, be such, that although elementary to the last degree, it may be sound and of such a character as to engender a love for the subject, and a spirit of inquiry which may sooner or later prove of service to the children, and enable them to start in life with some of the rough stones which might have lain in their paths removed, and furnished with the means of removing others by their own efforts.

Now it will be remarked that I have here drawn no distinction as to businesses, trades, or professions. I simply aver that education in schools should be of such a practical character as to cultivate the faculties, and develop the mental powers of the pupils, so that they may be able to grasp the higher and more intellectual branches of the work in which they may subsequently be engaged; in fact, that they may leave school fitted in some degree for the duties of daily life.

And where, in all this, is there anything that does not apply to girls equally with boys? Is it not just as necessary that the one should be educated for her position as the other? Assuredly, females of every grade have, sooner or later, to take their share in the work of life—to exercise an influence which it is impossible to overrate; and therefore, whilst we are educating our boys, who are to carry on the work of this great country in the coming period, it is our bounden duty to extend equal care to their sisters; otherwise, whilst we shall render our future men more intellectual, and qualified to elevate their positions, we shall be laying up a store of unhappiness for them, for, as they become more advanced, they will all the more require that those whom they may select as their companions in life should at least be able to appreciate their acquirements, and to sympathise with their labours.

The system of education which has until very recently existed, and which, in some cases, still obtains in ladies' and female schools, has been such as to fit a girl for the vapid conversation of an evening party, but how very few of the victims of it can speak rationally on any important subject of the day—be it art, science, politics, or literature—unless, indeed, it be the light, ephemeral matter contained in the novels or some of the periodicals; how few have been, whilst at school, so interested in any one of the studies as to desire to continue it when the "last term" is over. Music may, perhaps, form an exception to this. Young ladies do mostly prosecute this study, because it is not only pleasant to themselves, but gives pleasure to others—a trait in the character of woman which is so constantly the mainspring of her actions, and which spreads so unselfish and so refined an atmosphere over all she does. But, unless there exists in the individual mind a strong desire to excel, the music young ladies generally practise is only in character with the other branches of their education. We find but few who have been taught the principles of harmony—very few who can do more than play a given number of pieces after much practice.

But within a recent period the instruction in ladies' schools has wonderfully improved; and we find able and earnest gentlemen and professors in colleges engaged as visiting lecturers—a step which will, no doubt, in a few years, produce good results; and any one who has visited the schools of the period just past, and has seen the painfully lackadaisical manner of the pupils, would be surprised and rejoiced to see the young ladies fortunate enough to be placed in a school the principal of which has been bold enough to introduce sound scientific teaching, quite regardless of the question, "What do girls want with science?" It would amaze them to observe the interest of the pupils in geology, astronomy, natural history, physiology, perspective, model drawing,

&c., when these are practically taught, and when they are embodied in the regular school studies, instead of being given as extras, or treated as mere accomplishments.

Thus far I have spoken of the schools for the daughters of the upper classes; and at the head of these must no doubt be ranked the ladies' colleges, which are no doubt doing a great work. I fear I cannot say anything favourable of the private day schools for girls of the middle classes. Kept, for the most part, by the widow or daughters of a deceased professional man, sometimes by a lady whom misfortune compels to work for a living, at others by the daughters of a tradesman, whose entire education has been received in a similar school—all being utterly untrained for, and some being grossly ignorant of, their duties. The girls, cooped in a close sitting-room of a dwelling-house, receiving just as much instruction as they can glean from the books furnished them, leave school, mentally and physically enervated, sickened of books, tired of lessons, and ignorant of every single thing that could be of service to them in life. Yet will these girls become the wives of the great mass which is daily becoming of greater importance in this country, and from whom thousands of children are to receive their earliest impressions and their home training; it is these who are to be the companions of those whom we are now striving to educate usefully; it is these who are to be the heads of thousands of the homes of England, and, as such, employers of servants, now pupils in our National Schools, receiving by far a better education than their future mistresses.

Having already treated this subject more fully in a short pamphlet, called "*The Girl of the Period*," a few copies of which are on the table, it is unnecessary here to enter further into its discussion.

But even in our National Schools the instruction is very far from being practically useful. It is however, zealously and honestly imparted, and if once an enlarged scheme were propounded, and the teachers were allowed to carry it out, there is no doubt that the result would be all that could be desired, and the effect on the future industrial classes would be most important.

How, then, can technical instruction be applied to female schools? in other words, what means can be taken to give to girls an education which may be practically useful to them in the various positions which they may be called on to fill, whether as wives, mistresses of houses, mothers, teachers, nurses, servants, or as workers? The question, What can females learn? will no doubt occur to some of my hearers. I do not, however, intend addressing myself specially to this point, firstly, because I can distinctly assert that, during an experience in teaching extending over twenty years, I have never found any difference in the power of receiving instruction to exist between pupils in schools of either sex, whilst the interest and the desire to learn evinced by girls have always equalled and often surpassed those of boys; and, secondly, because the question of the equality of the mental faculties of women as compared with those of man has been so often discussed, forming, in fact, a staple article for youthful members of debating societies; of chivalrous young knights anxious to win their spurs. I think, however, that whatever may be the opinion as to the equality, it will be generally admitted that there is a natural dissimilarity; that, from various reasons, the action of the female brain takes a different direction to that of the male, a beneficent ordination of an All-wise Power who has assigned special duties and spheres of action to each.

It has been wisely said, man's home is the world, woman's world is her home; but I must add that proper, and I may call it technical, education is required for the efficient discharge of the relative duties of each; and further, that as many females are compelled by the force of circumstances to make the world their home, before they have a home in which to make their world; as many have to enter the field of industrial work, it is necessary to inquire how these may be best fitted for the sphere

in which they are to be placed—how they may be best armed for the battle of life.

I purpose, then, to direct your attention to the inquiry as to the branches of study which would be most useful in our schools for females; but I must here say that I consider that the whole subject of education has not in the recent discussions been treated in a sufficiently wide or general sense. The "education of the people" and "primary schools" have been spoken of, but I maintain that "the people" should comprehend the whole of her Majesty's subjects, not merely the poorer classes; that the term "primary" should be allowed its proper meaning—first schools—and that these should exist either as separate schools, or as classes in other establishments for the rich and middle classes as well as for the poor, otherwise the assumption necessarily obtains that because the parents of the pupil are rich, she is independent of rudimentary knowledge; that because they can afford to pay for a handsomely-ornamented structure, proper foundations are unnecessary.

I therefore urge on all engaged in this great work of improvement the necessity for a system of practical education for girls which shall bear upon all classes of society; and that, as the Sub-Committee on Technical Education appointed by this Society have in their report proposed separate courses of instruction for the civil and mechanical engineer, the architect, the chemical manufacturer, the agriculturist, the metallurgist, the miner, the merchant, and officers in the army, navy, and mercantile marine, so might a similar sub-committee inquire into the system most advisable for the instruction of girls of every grade. This committee might form the nucleus of a board of education, so much required for this country, and might consist, not only of gentlemen, but of ladies holding leading positions in education. Such a body should propound to the world definite views on the practical education of females, should examine and grant diplomas to female teachers, should sanction certain existing text-books, and encourage the publication of others. I feel convinced that the principals of the schools for the upper classes to which I have referred would readily fall in with any well-considered plans, that many would voluntarily submit their schools for the inspection of the board of education, and would only be glad to employ teachers holding the diploma.

A scheme then is required for the practical education of each of the great sections of society—the upper, middle, and industrial—and I will endeavour roughly to shadow forth a general idea for each, but must ask the members to bear in mind that the practical education of females is not so much a mere trade question as it is one concerning the well-being of society generally; that it is not so much a problem affecting our position in Arts and Manufactures as compared with other nations, as it is one of internal improvement, of domestic happiness, and of mental and moral elevation. And as I hope at a subsequent stage of this paper to draw attention to the necessity of training teachers, I will only here urge that if we wish to rear honest, affectionate, and zealous teachers, we must educate those who are to be the mothers of our future population. These are the teachers whose privilege it is to cultivate the soil whilst pure and holy; these are the teachers whose lessons leave an impression which neither time nor circumstance can erase.

I suggest, therefore, the following subjects for instruction in girls' schools of the upper class:—

FIRST COURSE.

Reading.	Outlines of the History of England.
Writing.	Elementary drawing.
Mental arithmetic.	Common things.
Ciphering.	Elementary music.
Outlines of grammar.	Plain sewing.
" geography.	Calisthenics.

SECOND COURSE.

Arithmetic.	Universal history.
English grammar and analysis.	The elements of physical science.
English literature.	Elementary chemistry.
Languages.	Natural history.
Object drawing.	Music.

THIRD COURSE.

Chemistry of common life.	Physiology in regard to health.
Botany.	Natural philosophy.
Geology.	Domestic economy and accounts.
Perspective and practical geometry.	Needlework, cutting and making.
Elements of astronomy.	

It would be foreign to my purpose to offer any suggestions as to the mode of teaching any of these subjects. I would merely say that in the elementary stages the instruction should, wherever possible, be given orally, and that even in the upper course the text-books should be simple, clear, and pleasantly written, and that the lectures should be explanatory and illustrative of broad principles, so as to lead the pupils to think, to inquire, and to read further on the subject.

And thus we reach the consideration of the means to be taken for introducing scientific and practical instruction into girls' schools of the middle class. But here we are, at the outset, met by the difficulty already alluded to, namely, that little or no provision for the education of the girls of this important section of society exists. Public middle-class day schools for boys have only just been established in London; but the manner in which those for whom they are intended have availed themselves of their advantages, proves how great was the necessity which previously existed; and even now the increase of such schools is demanded.

Were anyone, whilst watching the merry throng of seven hundred boys trooping out of the admirable Middle Class Schools in Bath-street—established through the energy of our reverend Chairman—to ask, "Where are the sisters of these boys educated?" the answer would at present be difficult, but the problem is one which must soon be solved, or the girls in our national schools will be sent out better educated than the daughters of tradesmen and clerks.

Assuming, however, that such schools will ere long be established, I may state that the whole of the scheme of instruction already sketched out can, with but few modifications, be adapted to them; thus, since many of the daughters of our tradesmen, as they grow up are found useful in their fathers' business, it is necessary, in order to qualify them for this, that the subjects of arithmetic, account-keeping, and correspondence should receive extra attention, to the exclusion, if necessary, of some of the sciences comprehended in the third course. And further, that as from this class we hope to recruit our ranks of teachers in schools, resident and visiting governesses, the art of teaching should be practised by those girls who show capability and taste for the occupation. And this might be done by allowing the elder girls, in turn, to take classes of the juniors, under the superintendence of more experienced teachers; the teaching, in this respect, would thus be absolutely technical in its character; these girls might afterwards proceed, for special instruction, to one of the training colleges, and thus middle-class schools for girls would obtain the advantage of trained teachers, now possessed by national schools only.

That properly qualified resident and visiting governesses are sadly wanted at this moment is beyond a doubt. A gentleman, who had been in communication with a highly-respectable scholastic agency, in order to obtain a visiting teacher for his daughter, received six applications. Not one of these had been in any way trained for the office. One was the widow of a deceased tradesman, who deplored that she was reduced to teach-

ing, but who knew no more of arithmetic than that she used to make out bills for her late husband. Another could "see" the pupil draw maps, but had never drawn one herself, and did not know what latitude and longitude meant. A third thought two hours a-day too much to be devoted to English subjects; she could not divine how the time could be filled up, and what would become of the accomplishments? The others had never attempted to teach, but, wishing to earn their living, they thought the occupation the lightest or most genteel they could adopt.

This proves that whatever arguments may be advanced against bringing female industry into the market to the injury of the interests of men, in this branch, at least, there is plenty of scope.

The question of the application of technical education to females must necessarily lead to some remarks on the employments fit for them, since the purpose of one should be to train for the other; and it may therefore not be considered out of place here, if I venture to suggest that the occupations to which females are trained should be such as are adapted to their sex, that clerkships in telegraph or other public offices and similar positions are without the sphere of woman's action, as tending to jar with that feminine reserve and modesty which is so characteristic of their sex, but that proper technical education will enable them to take up other branches, such as drawing on wood, wood-engraving, lithographic drawing, etching, designing, &c., which, whilst securing an honest independence, may be conservative of that delicacy which we so highly prize.

I will not here enter more fully into this subject, forming as it does a vexed question between two classes of political economists, some of whom advocate perfectly free trade for female industry, whilst others dread injury to the labour market if such were permitted; I simply say, educate, develop to the full the faculties which Providence has bestowed; and I may be allowed to repeat the words of Mrs. J. S. Mill, already quoted by Professor Houston in his admirable lecture on the emancipation of women from existing industrial disabilities. These words, in answer to the question as to what is woman's proper mission, are, "The proper sphere of any rational being is the highest which that being is capable of filling." Agreeing with this, but drawing from it conclusions different from those of the learned professor, I say, let us educate sensibly and practically; let us cultivate the intellect and the feelings; let us give to our females a knowledge of science and of art; and I am convinced that whenever they may be drawn into the arena of industry, the "girls of the period" will not bring discredit on their country.

It is, however, principally on the schools for the industrial classes that technical education can be brought to bear; and it is impossible to speak of these schools without deplored the action, nay, the very existence of what is called the "revised code." This measure compels the masters and mistresses of schools to present children of a given age for examination in a given standard; failing in this, the school (however conscientiously the teacher may have worked) loses the Government payment; and this is the more unfair, because those children who fail are in most cases such as are naturally dull, and, so far from having been neglected, have, in reality, given the teachers more trouble, and have required more of their care and attention than many of those who have "passed." But this is not the only evil resulting from the code. Technical education, of the character adapted to the locality, is thereby impeded; the teachers cannot work out their own ideas, however good they may be. They are bound to teach certain subjects up to a given standard, and this they do with a zeal and conscientiousness not surpassed by the members of any other profession, but they have not time, nor (to use the words generally applied) would it pay to introduce even the elements of the very sciences on which the industry of the locality depends.

In an admirable school, connected with one of our largest seats of industry, from which the boys are drafted into the works, where their rise is in a great degree dependent on their knowledge of mechanics, mechanical drawing, &c., no time at all can be afforded to the one, and I believe only one hour a week to the other; whilst in the girls' school the excellent mistress—a lady of many years' experience, holding the first certificates, and who is capable of giving the best instruction that a school of the kind could require in either science or art—can only squeeze in such lessons edgewise.

It is evident that this requires modification, and that the Government aid should be afforded, not by examination according to a universal standard, but that the managers should be not merely the administrators of the funds, but should in reality be the school managers; that they should draw up the scheme for the education of the pupils according to the requirements of the district; and that, when this has been submitted to the Council office, and has received the sanction of "My Lords," the payment should be made for the whole school on Her Majesty's Inspector certifying that the school is in active and proper operation, and that all the children are being honestly taught. The course of study in such a school should comprise:—

FIRST COURSE.

Reading.	Arithmetic (mental and slate).
Writing.	

SECOND COURSE.

Elementary grammar.	Common things and domestic work.
Outlines of English history.	
Elementary geography.	Elementary drawing.
Vocal music.	

THIRD COURSE.

Plain needlework.	regard to health, food, and nursing the sick.
Natural history of animals and plants.	Elementary domestic chemistry, in the highest class.
Elementary physiology, in	

The last subjects form the adaptation of technical education to national schools—that is to say, they are as much portions of the future avocations the girls are to follow, as mechanics and mathematics are of that of the future engineer; and, as in addition to any other business to which the girls may be apprenticed, an immense proportion of them will become general servants, cooks, nurses, or nursery governesses, the subject of "Common Things" should form a most important branch in their course of training. Thus, under this head, instruction might be given in general domestic work, such as lighting fires, cleaning stoves, furniture, &c., making beds, cooking, waiting, &c.; and most of these may be practised in the school, or in the mistress's residence, where the school-house is attached to it. Elementary drawing should be employed not only for the study of form, but as a mental exercise as well; to induce habits of exactitude and neatness in arrangement, and as an additional language by the aid of which the nursery governess may instruct her young charges, whilst the lessons in the natural history of animals and plants will foster a love of nature and beauty, the influence of which will be refining and beneficial in every way. Elementary lessons on the chemistry of food, nursing the sick, and the management of infancy, all come under the head of an education which is to fit the girl for her duties in life.

It must be remembered that the subject of common things is not a new one, but has for many years past constituted a portion of the examinations in the training colleges for schoolmistresses; still, the teaching has not become general; and it is to be hoped that in the coming changes in the educational systems a new impetus may be given to a branch of study which is calculated to confer such lasting benefit on the children of the industrial classes.

The following questions from such examination papers show that a basis has been laid, to which further scientific and economic instruction can easily be added:—

"What direction would you give with respect to female clothing in order to the preservation of health? State and clearly explain how it is that health suffers for want of outdoor exercise, and of water for the purpose of washing the body."

"Three of the first-class girls of an ordinary national school go out to service as housemaid, nurserymaid, and kitchen maid respectively. Write down suitable directions for one of the three."

"Mention the chief vegetable and mineral poisons from which children are especially in danger; what are the respective remedies to which immediate recourse should be had?"

"What diseases arising from want of cleanliness are commonly met with amongst the children of the poor? what is the proper treatment of each?"

"Describe accurately the best system for teaching needlework, including the fixing and cutting out."

During the year 1854 Miss Burdett Coutts paid frequent visits to Whiteland's training school for schoolmistresses; and with that benevolent spirit in which she so constantly acts in the promotion of the welfare of her fellow creatures, that excellent lady offered prizes for teaching common things according to a scheme given in a volume since published by Mr. Hatchard, entitled, "A summary account of prizes for Common Things, offered and awarded by Miss Burdett Coutts, at Whiteland's Training Institution." This scheme received the sanction of the Bishop of London and of the Committee of Council on Education.

Amongst the subjects on which the schoolmistresses were required to write essays were:—

1. Food—Its preparation and economical use.
2. Clothes—The value of materials, cutting out, making, mending, and altering.
3. Household arrangements generally—The best means of preserving health by purifying the air in close situations, especially in times of sickness.
4. Duties of servants—Showing the duties of the cook, laundry-maid, &c.; instructions to servants in the country, especially in regard to their treatment of animals; how they can best manage and dispose of their wages, &c.
5. Management of children—Instructions to nursery maids, &c.
6. Management of the sick—The preparation of food for them, and the use of simple remedies; ventilation of the sick room, &c.

The competitors for the prizes gave lessons also, in the presence of Miss Coutts, on the following subjects:—

1. The clothing of a workman's family.
2. The general qualifications of servants.
3. Cooking.
4. Bread making. The coffee plant.
5. The duties of a daughter in attending to the care of a family supposing the sickness or death of the mother.
6. The breakfast table.
7. Washing.
8. The general duties of servants of all work.
9. Lighting a fire.
10. The duties of a nursemaid.
11. Salt.
12. Shirtmaking.
13. Sago.
14. Attendance in a sick room.
15. Dress.
16. Sweeping a room.
17. Cleaning a house.

That all these subjects are of the greatest possible importance cannot be denied, and we can only regret that such teaching has not become universal in the

country. That it is very far from this is proved by the utter incompetency of most of our domestic servants and nursemaids, and the lamentable absence of economy which is so painfully obvious to all who are accustomed to visit the homes of the poorer classes. Still, to use a common expression, the narrow end of the wedge has been inserted; and such seeds as have been sown by a lady who, up to this very moment, labours for the benefit of her fellow creatures with a zeal and affectionate care which entitle her to the gratitude and respect of the whole nation, have not been cast upon barren soil. It is only required that the country at large shall with one common voice declare that the years spent at school should not be lost, but that as every day brings the girl nearer to the time when she must become a responsible actor on the great stage of life, the hours should be economised, so that each day may make her more qualified for the position she is to take.

The very circumstance of my having dwelt thus long on the subject of "common things" will I am sure protect me from censure, when I say, that common things are not all that should be taught in schools for girls. True, such knowledge will tend to making them good servants, and will teach them the economy of daily life—and great indeed will be the blessing to the country when this shall be achieved—but, of the human mind, who shall dare to say, "thus far shalt thou go and no further." And as each of these children is endowed with a mind susceptible of knowledge, I believe it to be our bounden duty to develop the intellect to its utmost capability. Of course it is right to give to each child the knowledge which will make it efficient in its station of life, but in this country no child is born a slave, bound to remain for its life in that condition; and as in this age of commerce and emigration the fathers or brothers of many of these girls are likely (at least we hope that the education we are giving them will enable them) to rise in the world, it is only fair that we should give them the rudiments of an education which, whilst it may assist them in bettering their condition by their own exertions, may at the same time prove a source of happiness to them under any improved circumstances to which they may attain. I would, therefore, teach them not only common things, but the elements of physiology, chemistry, and drawing to elevate their thoughts, to lead them to think of the grand principles of science evinced in the operations of nature which are daily going on around them; and I cannot but think that this would tend to refine their minds, and to strengthen their hearts in the love of the Great First Cause, and even in a utilitarian point of view, such higher instruction would enable those girls who can take it, to select some occupation for which they may be fitted other than domestic service.

That the teachers of schools for all classes are only longing for some system which shall release them from the thralldom of the present routine, I am convinced; nay, even in schools for the upper classes the very pupils are becoming anxious for higher and more scientific instruction.

In proof of this assertion I beg to be allowed to quote the following, extracted from an article published in the *Bayswater Chronicle* of January 30th last, headed "A Girl's Thoughts on the Education of Girls." The fair writer says:—"That education is the foundation of character, not the mere acquirement of knowledge, is a fact which is almost universally overlooked. What a woman knows is not of nearly so much consequence as what a woman is. The mere cramming of a head with knowledge as you cram a cushion with stuffing is not education. The heart must be enlarged as well as the mind, and the thoughts ennobled as well as the reasoning faculties developed.

"Almost all children consider learning a hardship, and regard it as a sort of mental rack, from which they are released with their limbs cramped and stiff, and their brains in a cloudy condition. Why? Because their life

at school consists almost wholly of lessons. Lessons are considered almost always the sum of education. Oh, if the teacher would sometimes throw aside the books that little heads have been poring over for so long, and direct their attention to the great book of nature which has been lying before them all their lives unnoticed, and from the pages of which more beauty and instruction can be gained than even from Lindley Murray, or Carpenter's spelling. The interest of children once gained, their impressions sympathised with, and they would regard their teachers as friends, not dragons. In the first place, they should be taught to love knowledge, by having it imparted to them in such a manner that they cannot fail to be interested, and afterwards, when the glory of the light begins to illuminate the darkness of their minds, they will 'grapple it to their hearts with hooks of steel' as their best and truest friend."

In conclusion, the young lady remarks in relation to the mission of the female sex, and the necessity of proper training, "They little think of the tremendous responsibility resting upon them, of the wide influence either for good or evil that they are exerting. They are founding a train of causes which will descend through all coming time. Long after they have gone to their eternal home their words and actions will be aiding in the formation of character. We cannot then arrest the causes that our lives have set in progress, and they will continue urging mortals onward in passion, sin, and woe, or elevating them to virtue and heaven for ever."

When I mention that the writer of this article is at this moment a pupil in a ladies' school, and that it was written merely as a school essay, not at the time intended for publication, it will, I am sure, be the opinion of most who have heard these extracts, that it is creditable to her intellect and feeling, and to the establishment in which she is a student.

I am fully aware that the scheme I have thus roughly sketched is likely to call forth two objections. Firstly, that the hours of attendance, and the time a girl remains at school, are too short to admit of an enlarged system of education.

That these are difficulties cannot be denied; but I think that, by a thorough revision of the hour-table, much time might be saved, some subjects being excluded altogether, and the system of teaching others being much simplified. That children remain by far too short a time at school is a real evil, the amelioration of which deserves the best consideration of all connected with education. I venture to submit, that when the parents find that, on reaching the upper classes, they are taught practically useful subjects, and in consequence obtain better places and earn higher wages than they would otherwise have done, many—at least the most sensible ones—will make an effort to allow the children to remain at school as long as possible; and further, if the school fee were reduced each year, or each time the girl is promoted to a higher class, so that when she reaches the highest she would be admitted free, an inducement would be held out which I have seen producing excellent effects in one of the best schools with which I am acquainted.

The second objection which we are likely to hear is, "You will over-educate the working classes;" but I must maintain that as the law provides that children shall not be allowed to die of hunger, so it is the bounden duty of the whole nation, as it is the best policy of the state, to give to all children the benefit of such an education as may fit them for their duties in life, and enable them to improve their condition.

I cannot but think that the term "national school" is one wrongly applied. Why should only such schools as receive eleemosynary aid be considered national? Ought not "national education" to include the whole nation? and should not such a system touch all classes of society?

We require then a complete series of public schools, for upper, middle, and industrial classes, for males and females; such schools to be governed by local boards of

education, which should, to a certain extent, be responsible to a minister of education; and the law should enforce that all persons keeping private schools should hold the diploma of an examining body, should employ certificated teachers, and should conduct the school on a well-considered plan.

This system is already to some extent in operation in the schools for the poor, and are not the children of the upper and middle classes entitled to the same protection?

But, it may be said, this would interfere with the liberty of the subject; but with all due deference to the love of freedom inherent in the mind of every Englishman, I urge that liberty is only to be permitted to the individual until it becomes injurious to society, and as neither the professors of law nor physic are allowed to practice without the necessary diploma, as it is not deemed safe that we should apply for advice to a lawyer, or for relief to a medical practitioner, unless each is known to be properly qualified, it is monstrous to think that the moral welfare and intellectual progress of our children should be intrusted to those whose competency for the high and sacred duty they undertake has never been inquired into. Nor would this system affect injuriously those of the private establishments in which the teaching is already well conducted. I know from experience that the proprietors of many of these would only be glad to submit to any ordeal that could be proposed, and would join in any movement that should tend to improvement in education. This feeling has, no doubt, been fostered by the admirable working of the College of Perceptors; and when I mention that one private schoolmaster in Wales, in addition to regular systematic examinations in his school, sends up parcels of examination papers on science and art to London, paying a fee for their being reported upon, it will be seen that certainly no opposition is to be expected from heads of similar establishments, especially as this is but one of the numerous examples I could quote.

The sooner then that such movement is set on foot the better, for I feel convinced (and I am sanguine in the hope that I shall be supported in my view) that no new system of education will be of any real service in this country unless it is brought to bear upon all ranks of society, and unless it provides instruction of a sound and practical character for girls as well as for boys.

Nor are the mere subjects which are to be taught to girls the only matters which are to be considered. The reasoning and practical tone given to the mind, the general training, the regularity of habits, and the economy of daily life, are all most important in the education of those who are to be the wives of the present and the mothers of the future generation; and if we would have the influence they will assuredly exert productive of good, we must let their instruction be such as will fit them for the important positions they are destined to occupy.

It is on his mother's knee that the child, "eyes raised to heaven, and small hands folded fair," is taught to raise his voice to "Him who all things sees;" it is whilst walking at her side that he learns to turn his foot aside lest he should injure the worm, so marvellously made, and to watch the opening of the budding leaf; it is of her he asks, "What is the sun?" and to her he says, "Mother, what is there beyond the skies?" And she reads to him out of this fair book of nature, and the instruction she gives him is wrapped in veneration for that Great Power whose law, by which all around is governed, is science; and the boy starts as a student, with the best of all incentives to the acquirement of knowledge—the love of inquiry. Thus, then, does woman lay the foundation of all education, and therefore it is that I have ventured to bring this subject before the members, in the hope of calling attention to the absolute necessity of an improved system of female instruction.

The Society of Arts, to whom the country already owes so great a debt of gratitude for its efforts in promoting the education of artizans, and for the intellectual

advantages it has afforded to all classes of society, may be fairly asked to add the weight of its influence in this cause, and with such aid there can be no doubt that some methods will be devised for the promotion of Technical Education in Female Schools.

DISCUSSION.

Mr. HYDE CLARKE said, the very clear and able statement which had been put forward by Mr. Davidson, supported as it was by fact and reasoning, could not fail of producing a deep impression, but he wished to show the necessity of some immediate action being taken, for he remembered being called upon 30 years ago to take part in an agitation of precisely the same kind, when a Parliamentary Committee was obtained. That agitation was not confined, as was generally supposed, to the subject of schools of design, but took up the whole question of technical education as it had been defined by Mr. Davidson; nevertheless he regretted that no remedy was provided for the wants which were shown to exist, although the remedy was pointed out. A Government School of Design was formed in Somerset House for female instruction, not only in drawing but for the extension of technical education generally, and that became an example for the female schools of art which had since been established throughout the country, but the rest of the subject had not been dealt with even up to the present day. Amongst the many points which had been touched upon in the paper, few were of more importance than that of payment, which it was suggested should be decreased in amount as the pupil progressed; but if a careful survey were made of the whole question of education generally, he believed they would arrive at the conclusion, not only that school fees should be reduced, but that they should be abolished altogether. He was sure that it was a mistaken view of the subject to regard the payment of fees as a necessary inducement to the obtaining of education, and to suppose that in England alone, of all countries in the world, education would not be valued unless it were paid for. He was convinced that the exaction of even a small fee served as a discouragement to education, whilst it was no real gain to the community, because, whether national education—using that term as it was used in the paper, to include all classes, from the highest to the lowest—were paid for immediately from the pockets of the parents or not, it was paid for by the country; there was no means of avoiding that conclusion; and the only means of providing it effectually and economically was to provide it from the general funds of the country, under a proper system of supervision. It was not and could not be necessary to exact a price for schooling in order to ensure its advantages being appreciated; for instance, in the Royal Academy, men laboured year after year with often but small prospect of remuneration, and there the instruction was gratuitous; and could anyone believe that in other branches of instruction there would not be an equal inducement? When they considered the many circumstances which tended to restrict education, it was evident that it was desirable to remove every obstacle as far as possible. There should be no tax upon knowledge in any shape; it should be offered to the public in the most universal manner possible; and he would therefore go farther than Mr. Davidson, and advocate a general gratuitous system of education, which all might receive on an equal footing. With regard to drawing, considered as a part of technical education, he was surprised that Mr. Davidson, after so clearly showing its importance, should have introduced it only in his second course. Drawing, as was said in the paper, was equivalent to an additional language, and was one of the most powerful means of increasing, improving, and correcting the faculties of observation, and should therefore be introduced at the earliest possible period as an essential part of education, and not left to an after period, when it might be looked upon merely as an

accomplishment, instead of as something essentially necessary. If it were to be taught properly, however, it must be taught carefully, and proper time allowed for it. Only a few days previously he had been looking at a drawing by a pupil in a middle-class school; at first sight it appeared a very good copy of that from which it was taken, but a little closer examination showed that almost every line was out of place or out of proportion. On drawing attention to these defects the excuse given was that so little time was allowed for drawing, that the pupil could not properly finish his work, nor could the master properly examine it. The principle laid down by Mr. Davidson must be constantly borne in mind, that both males and females were unequal in mental power, and that the dull must be provided for as well as the bright, a matter which was far too much forgotten. He was much pleased to find that reference had been made to those practical subjects which really were to be kept in view in the technical education of women, as had been done by Miss Burdett Coutts in Whiteland's Training Schools. In order, however, to succeed, they must awaken and endeavour to direct public opinion. This, rather than the views of schoolmasters, directed the course of instruction in all our schools, both public and private, which in almost every case was grossly defective. They must therefore act upon public opinion, which could only be done by continuous and combined agitation. In referring at the outset to his own past experience, he had simply been actuated by a desire to impress upon the meeting that a whole generation had already passed since a discussion on this subject had been evoked, and still nothing had as yet been done; and that unless they wished another generation to pass in the same fruitless way they must set on foot some organisation for carrying out the object in view, allowing neither the Government nor the public to go to sleep upon the matter, but agitating for this moral reform in the same way which had proved successful in political and fiscal matters.

The Rev. A. J. D. D'ORSEY said that, as one who had had thirty years' experience in teaching, he had listened with the greatest satisfaction to the paper, with nearly every word of which he cordially agreed. Technical education really meant education in an art, and that word art would require to be qualified by the position of the person to be educated. Mr. Davidson, therefore, had taken a part of the whole, which whole required a little consideration, for it was apt to be lost sight of when considering details. Education must be, not mere teaching, but a training of the whole human being, morally and religiously, physically and intellectually. If anything short of these three things were kept in view, true education was not accomplished, though the result might be a complete athlete, a wonderful development of intellect, or a remarkably good individual. Almost all "educationists" (using this term as distinguished from "educators") lost sight, more or less, of this grand, comprehensive principle; very naturally, they looked for one particular part of the whole, and cultivated that assiduously. Nothing was more difficult than to reconcile the conflicting views of educationists on this point. It was hardly the time or place to go in detail into the great religious question upon which so many were divided, but, speaking as a clergyman, as well as a schoolmaster, he must say that the religious question had always appeared to him to lie in a nut-shell, and that the true solution lay in taking from the schoolmaster all concern with the dogmatic part of religion, and leaving that to the clergyman—who might reasonably be supposed to be better acquainted with it—and thus the former would have more time to devote to the moral, physical, and intellectual education of his pupils, and ample time would be found for all those studies, which the non-practical man might fancy could not possibly find place in an ordinary course of instruction. Time must be economised, as it could be to an enormous extent, by adopting some of the educational machinery

which their German neighbours had introduced—maps, blackboards, natural objects, &c.; by such means more could be taught in a few minutes than under the old system in an hour. When you put a book into a child's hand, and said—"learn that, or you will be flogged," there was no inducement to learn beyond the dread of punishment, and though the child might accomplish the task, he could not be said to be *tought*. The good teacher was independent of books, and with his chalk and black-board, or with his natural specimens, he demonstrated what he wished to convey, and the children, so far from looking upon it as a lesson, would crowd round and pour questions upon him faster than he could answer them, and thus a real interest was excited in the acquisition of knowledge. Thirty years ago he went to Germany, to see their plan of education, and his eyes were then completely opened; he found that a real system of education was being pursued, not only *words* taught well—quite as well as in England, for the best Greek and Latin dictionaries and lexicons come from Germany—but *things* themselves were taught. Instead of describing a thing, they showed either the thing itself or a drawing of it, and thus a clear idea was rapidly conveyed to the pupil's mind. This kind of teaching was now beginning to permeate England, and this was what was wanted, not as contradistinguished from verbal teaching, but as auxiliary to it. To teach words well you must present to the child the objects which they represented, and a much deeper impression was thus made than by merely finding out the words in a dictionary. For instance, a model or drawing of a mill would convey a much better idea to the mind of a child than the definition given in Johnson—"a machine or engine erected for the purpose of comminuting matter." Mr. Hyde Clarke was quite correct in saying that public opinion required to be educated, for all enlightened teachers were far in advance of public opinion. Mrs. Jones wondered what was the use of teaching her daughter geology; she had never heard of primary and secondary, stratified and unstratified rocks; and having a dim idea that there was something dangerous and heterodox about it, gave instructions that no lessons should be given her daughter in such subjects, and in this way children were deprived of the instruction which school teachers provided for them. As long as public opinion was in this state, teachers could not carry into effect the schemes which they would fain see realised, and he believed that they would never have education in this country on a proper basis until the educator, as such, was recognised—until he was registered and diplomaed, just in the same way as a lawyer, physician, or surgeon, and until it was possible for a village teacher, if properly qualified, to become Minister of Public Instruction. The present system of putting a peer or a great politician into this office, and excluding from every position of trust and emolument the practical educator, was a great mistake, which England must rectify as soon as possible. The educator must be put in his proper place, and promotion must be open to all. The lawyer could rise to be Lord Chancellor, the poor curate might become Archbishop of Canterbury, and the village doctor might be Physician to the Queen or President of the College of Surgeons, but the village schoolmaster got his £100 a year at twenty years of age, and when he was fifty or sixty he might go to the workhouse unless he had made some provision for himself out of that small pittance; there was no career open to him. He (Mr. D'Orsey) had made similar statements before, and had been twitted with the fact that the head-masters of Eton, Harrow, and other public schools were often made bishops; but it was as clergymen their advancement came, not as teachers; the white neckcloth was a passport to society, while the teacher, *qua* teacher, was nowhere. It was a strong assertion to make, but he could substantiate it, that so far from raising your *status* in society by teaching, you lost caste by it. A gentleman would be deeply grateful to anyone who procured for his son an

appointment in a Government office, but if you told him that the lad had great talents for teaching, and that you could get him a good post as schoolmaster, the parent would be not less surprised than indignant. Speaking both as a clergyman and a teacher, he must say that he considered the latter the most important member of society. Until the profession of teaching was recognised and honoured all their essays and speeches would be but beating the air. Education was not to be regarded merely as a good thing for the lower orders; they wanted a scheme of education for all grades of society, which should be as applicable to the heir apparent to the throne as to the poorest person in the kingdom. He was an advocate for compulsory education, but not confined, as was commonly the idea, to the lower classes. He could tell them of a Duke whose family had suffered from the want of a compulsory system of education. They wanted a system which should apply to all classes, as was the case in Prussia, although, of course, the law was almost inoperative, because no one required to be compelled to do that which every one saw was for his own advantage. He might be accused of wandering from the point, but he believed that his remarks were all connected with the subject before them. He had had long experience in teaching ladies, and could testify that technical education, so far from interfering with their usual studies, promoted them. A girl would more readily write an essay on astronomy, geology, or botany, if she had first been furnished with ideas, than on irregular verbs or participles. He recognised the essay which Mr. Davidson had quoted as the work of a young lady about 16 years of age, who was pupil in a school where he had the honour of teaching, and he thought they would all agree that this was an instance in which technical education did not interfere with progress in other matters, but rather accelerated it.

Mr. GEORGE CAMPBELL suggested that the discussion should be more confined to the question of female education. He sympathised with all Mr. Davidson had said, with the exception, perhaps, of his remarks on the Revised Code. Almost all persons were now convinced that the education both of boys and girls must be improved, but he agreed with the views which had lately been expressed by Mr. Froude, that real, true education was that which would enable a person to earn his daily bread; and he thought that applied not only to men but to women also. Mr. Davidson had advocated a system of education which should make girls better wives, daughters, and members of society, and he was sorry he had not carried the subject more into detail, and explained in what matters more particularly women should be technically educated. He did not share in the sentimental feeling so common in the present day, which, on the one hand, would go to the utmost extreme in advocating the rights of women, and, on the other hand, would relieve them from all labour whatever. He was, however, far from wishing to go back to the old plan, when the men stood still and the women did all the work; and the employment of females in agricultural gangs might be very objectionable, but his experience in Scotland, where a great part of the farming work was done by women, showed him that by such employment they did not necessarily lose self-respect or womanly feelings. At the same time it was evident that such technical employments as spinning, weaving, &c., were more adapted to women than those which required the mere exercise of brute force, and in such matters, therefore, they should be thoroughly instructed. Technical education, however, was also wanted for the higher classes, where the women had not hitherto been in the habit of earning their bread. As he had said, he did not sympathise with much that was said about the rights of women, for he was inclined to think they had already power enough; but he felt that the current of feeling and events was against him, and he feared that in spite of all which could be said these rights would be obtained. On the other hand, he did not think the gain would be all on the side of women, because, after all, rights must be correlative with work, and if the law were changed

so as to make the rights of wives equal to those of their husbands, he did not think the latter would see the propriety of doing all the work. In any case, women should be technically educated, so as to earn their own living. He was not prepared to say how this should be done, but certainly it was a matter worth discussion. Hitherto he had only heard one subject, that of drawing, suggested as desirable for women, and no doubt at South Kensington great facilities were given for its acquirement, but he regretted that in that great national establishment the ornamental arts had, to a great extent, driven out the more useful and practical ones.

Mr. GEORGE WHITE did not quite agree with the remarks which had just been uttered, nor did he think Mr. Davidson had brought before them much information on the subject of technical education. As he understood technical education, it meant that practical instruction by which a man was enabled to earn his living, or to excel in some particular art; but Mr. Davidson had, he thought, wisely left that part of the subject, and confined himself to the question of female education in general. Like one of the former speakers, he had been engaged in similar discussions thirty years' ago, sometimes in this room, and yet a generation had passed away and nothing had been done; they were talking still. He saw, however, that they were considerably nearer some great improvement in education than they were at that time. Although the public generally might not be so far advanced as the enlightened schoolmaster was, yet they were better acquainted with the merits of true education, and had fewer prejudices against its adoption. He considered, therefore, that we had made great progress, for the country was steeped in deep ignorance, and great impediments had to be surmounted. They had looked to the wealth rather than the welfare of the population; if they had been more earnest in endeavouring to educate the people in general, rich and poor, and less earnest in the race for wealth, they would not have been in their present position of pauperism and ignorance. With regard to the revised code, he must say, as a practical man, that at the time it was introduced there was a general feeling in the country that schoolmasters should be put upon piece work. There were, doubtless, many evils connected with its operation; for instance, it regarded education simply as a debtor and creditor affair, but he saw no objection to teachers being put upon the same footing as other labourers with regard to their work, and that they should be required to show a certain amount of result which could be verified; he believed that results might be asked for and obtained with respect to the moral as well as the intellectual condition of the population, and therefore, though he thought there were evils connected with the revised code, there were also some excellent features about it. With regard to payment for education he had had some experience, having been one of the first to draw largely from the pockets of the poor in this way. He had taken as much as £40 in an ordinary day-school on a Monday morning, in one of the poorest neighbourhoods in England. Penny schools used to be laughed at, and then the fee was raised to twopence and threepence; and when the parents found the value of the education which was given they were willing to give even another penny, and thus more teaching power could be provided. He was not quite prepared to advocate entirely free schools, although, of course, if it were thoroughly understood that every child had a right to a free education, there would be no pauperising effect, as there generally was in connection with most of our charities. Still he was not prepared to say at the present time, with the present forces in existence, and the vast amount of money contributed by the public and by various benevolent institutions, as well as the voluntary efforts of the clergy, that schools should be entirely free. He was, however, very anxious that some free schools should be established, and he was very glad to see the importance which was attached by Mr. Davidson to "common things," for he did not think for his own part

that he should much like a "technical" wife or daughter. He believed common things could be so taught by an intelligent teacher as to educate all that could be educated from a thinking and growing mind. A good teacher ought to make the ordinary processes of reading, writing, arithmetic, singing, &c., matters of educational training. The great difference between a good teacher and a bad one was, that one merely taught dogmatically, while the other made the instruction a real education. The one interested the child and did not fatigue himself, while the other exhausted the powers of the pupil and his own patience. It was a matter of great importance that girls in all classes should be well taught how to read. Nothing could be more useful than that a woman in any sphere of life should be able to read aloud with pleasure to herself and her hearers, and yet how few of either sex—perhaps fewer in the male sex than the female—possessed this valuable accomplishment. There were also many domestic matters which it was most important that girls should be taught. A great deal had been said at different times of the instruction given in workhouse schools; he had had a girl who had been so educated, but he found she had never seen anything but the bare walls, and did not know whether or not a bottle of wine grew on a tree and was cut off at the cork. A good common education he most cordially approved of, but a technical education for any particular art or science must involve selection, which involved favouritism in reference to those selected, and possible injustice to those who were not. He should therefore leave that matter to work itself; technical education should be provided by those who required persons so trained. Those who possessed genius would educate themselves, and choose the line of study in which their genius could most profitably find its development, and they should be assisted by the benevolence of the country, and by the funds charitably left for educational purposes.

The CHAIRMAN said he had been much pleased to preside over so interesting a discussion, especially as he had a great regard for Mr. Davidson, who had devoted so much time to this important subject. The education of girls was one of the great questions of the day, and it must be coped with. They had been talking too long, and it was high time something should be done. Allusion had been made to the schools in Bath-street, and he must say they were formerly in much the same position with regard to the education of boys as was now complained of in the case of girls. There was no end of talking and discussion until he said "Let us begin and do something," and directly the effort was made the schools proved eminently successful. In the same way he would say, "Begin and establish a good girls' school," and the subjects to be taught would soon follow. He should be very glad indeed if he could be of any assistance in such a matter, and he hoped a girls' school would be commenced at once. It had been his privilege during the last summer to make a tour in America, and he was exceedingly pleased with the state of female education in that country, and was glad to find that female delicacy or modesty did not appear to be wanting in the slightest degree, although the education of boys and girls together was very general. He would not go into the question of whether the right things were taught, or whether he should like to see the same system introduced here. After all there was nothing like Old England; but he should like every child, here as there, to have an opportunity of being educated, and this brought him to the question of payment. He had formerly been a great advocate for payment, but he was a convert to the free system, and thought now that schools should be open in every place for all classes. He believed if they were opened all classes would avail themselves of them, and that such a system would do away with a great deal of that wretched class and sectarian feeling which was one of the greatest curses of England. The small amount of twopence or threepence which was paid was not really worth consideration; and if they had a good free system introduced he believed they would in

time become a well-educated people, which, unfortunately, was not the case at present. He did not think domestic matters, such as making beds or cooking, should be taught at school; the proper place for such instruction was at home. There was no greater nonsense than many of the so-called industrial schools, where girls were taught to cook with machinery and appliances which they never found at home or in any place of service to which they went. He remembered many years ago, being invited, in company with the late Dean of Hereford, to visit an industrial school at Finchley, where there was certainly a capital dinner of leg of mutton and potatoes served, but his companion, Mr. Dawes, as he was then, by a few plain questions, such as how long the meat had been cooking, and so on, soon elicited from the girls that the leg of mutton had been cooked at the baker's, and that all the girls had done was to peel the potatoes. In conclusion he hoped that something practical would follow from what had been said, and he moved a cordial vote of thanks to Mr. Davidson for his admirable paper.

The vote of thanks was carried unanimously.

Fine Arts.

BELGIAN TRIENNIAL FINE ART EXHIBITION.—The Belgian Government has announced the appointment of the commission for the management of the general triennial exhibition of works of fine art, which is appointed to take place this year at Brussels, though the date is not yet fixed. The commission includes, besides officials, Baron Leys, MM. de Keyser, Thomas, Geefs, Simonis, and many other artists of high reputation.

GENERAL EXHIBITION OF FINE ARTS AT THE HAGUE.—The commission entrusted by the authorities of the Hague with the management of this exhibition, announce that it will open on the 29th April and close on the 6th June, and will be held in the rooms of the Academy of Painting. Works intended for exhibition are to be addressed as follows:—"à la Commission directrice de l'Exposition des Beaux Arts, au Fœlœen Akademie, Princessegracht, à la Haye," between the 1st and 15th of April. No work will be received after the latter date. The commission will pay the carriage, provided the works are sent by luggage train, &c., *petite vitesse*, but not otherwise; and the expenses on the return of the works are to be borne by the exhibitors. The conditions are, that all works must be by living artists; that no one shall send more than three works; and that the frames shall be square, or mounted on square backs. The commission will award seven gold medals, three to foreign and four to native artists, but exhibitors may decline to compete if they think fit.

LAMARTINE.—It seems probable that several memorials will be raised without delay in honour of the late poet and statesman; the subscription now on foot in Paris is for a statue to be placed in the Place de l'Hôtel de Ville, on the pedestal of which is to be recorded the service done to his country by Lamartine in 1848, when he withstood the attempt to adopt the red flag proposed by the ultra-revolutionists. The Municipal Council of Mâcon, the place of Lamartine's birth, held an extraordinary meeting the other day, and voted by acclamation a sum of 5,000 francs for the erection, or in aid of the erection, of a statue there.

Commerce.

BRANDY PRODUCTION.—Consul the Hon. H. P. Vereker, in a report on the trade of the port of Tonnay-Charente, for the year 1867, recently issued, and quoted

in the *Produce Markets Review*, supplies some interesting information concerning French vineyards. This trade is almost confined to the export of brandy, the Charente being one of the finest vine-growing districts in France. That it has flourished is evidenced by the continually-augmenting tracts of land put under vine cultivation, and by the fact that there were more than 6,500,000 bottles of brandy shipped from that port to the United Kingdom and the colonies. In fact, the various localities, where the vineyards were formerly considered as of secondary importance, the vine has now become the principal object of industry. The tracts under vines are stated to have comprised, some years since, 111,682 hectares, or about 1-6th of the superficies of the department, the hectare being equal to nearly 2½ acres English; and at present, though there are no means of accurately ascertaining the lands under vines, it is estimated to amount to one-quarter of the whole, or, say, 575,000 acres, in the Charente-Inférieure. It is not on the produce of the Lower, but on that of the Upper Charente, or the Department of the Charente, that the trade of Tonnay-Charente mostly depends, the chief centre being Cognac. Mr. Consul Vereker points out that as regards the Tonnay-Charente trade, the year 1867 commenced under auspices somewhat unfavourable, for, in consequence of the unprecedented exportation of brandy in the preceding year, the stock in hand at the French side had decreased, and the markets in the United Kingdom seemed fully supplied, whilst the stock there tended to increase. To these drawbacks were added late frosts, the vine disease, and unfavourable weather for ripening, which excited fears that a material reduction would be exhibited over the trade of 1866. The falling-off, however, only slightly exceeded 1,500,000 gallons, which is highly favourable, considering that the brandy exports of the port have grown from 2,888,094 gallons in 1862, to 6,303,880 in 1866, and to 11,562,210 in 1867; the reduction last year being to only 9,770,420 gallons, the value of which is estimated at £1,776,440. But while the Charente has produced this enormous quantity of brandy, its cereal crops have proved very deficient, and some months ago, we are told, that there was so great scarcity in the district as to render necessary increased importations of provisions. The French Government and French capitalists deserve credit for their combined efforts to develop the resources of this rich province. Railways are penetrating the heart of the agricultural districts. The completion last year of the line from Saintes to Angoulême places the Charente in direct communication with Rochefort, Bordeaux, and Paris; according to Mr. Consul Vereker, it opens up the most important producing district in connection with the brandy trade, and has already exercised a sensible influence on commerce, as many of the goods previously conveyed for shipment by boats on the river are now carried by rail, and, judging by analogy, it may be assumed that the railway will in time supplant the slower conveyance by boat. The Charentes Company are also undertaking a railway from Saintes to Contras, on the Bordeaux line, which will pass through a productive district; while efforts are being made in other directions so as to connect these multiplying and expanding vineyards more closely with the markets of the world.

LEECHES.—Paris is the best market in Europe for leeches. The mouth of the Danube is now the best fishing ground, and no less than £120,000 in value of leeches are annually sent to Paris from Trieste. The best leech is said to be a native of Australia, as he does his work in a shorter time than any other. The Viceroy of Egypt has granted a monopoly of 3,000,000 leeches annually, which are to be found in the bed of the Nile after the periodical inundation of that river, to a French dealer. On arriving in Paris those not required for active duty are sent to Gentilly, where they are lodged in reservoirs provided with greasy mud and filled with greenish water.

EXPORTS OF COAL FROM BELGIUM TO FRANCE.—The exports of coal from Belgium to France, in 1866, amounted to 3,226,378 tons, as compared with 3,014,452 tons in 1867, and 3,393,649 tons in 1866. The quantity of coke exported from Belgium to France last year was 193,131 tons, as compared with 232,984 tons in 1867, and 292,793 tons in 1866.

EXPORTS OF GUANO FROM PERU.—According to the official report of the harbour master of Callao, the number of vessels which left that port during 1868, laden with guano from the Cincha islands, amounted to 358. The quantity of guano which was exported during the year was estimated at 300,000 tons.

Colonies.

WHALE TRADE IN MELBOURNE.—Among other symptoms of enterprise in this colony, a commencement of something very like a whale trade has been made by a Melbourne firm. It was recently represented to the Government that they ought to encourage any attempt to develop the whaling trade in the Southern Ocean, and make Melbourne the rendezvous of whalers pursuing their labours in higher latitudes, in search of oil and whalebone. There are many reasons in favour of such undertakings. Whales are supposed, by competent judges, to have been unusually abundant in the Southern Ocean for some years. Melbourne is most advantageously circumstanced for supplying provisions, and all the materials required in the outfit of whalers; and, on the other hand, the establishment of such an industry in our seas, while furnishing a new and lucrative employment, would give an immense impulse to various commercial interests. The Commissioner of Customs so far approved of the suggestion, holding out hopes of a remission of port charges, and other privileges, to any firm making a practical beginning, that the project is rapidly assuming a definite shape.

Publications Issued.

CASSELL'S TECHNICAL SERIES OF MANUALS. (*Cassell.*)—The first volume of this series, called "Linear Drawing," showing the application of practical geometry to trade and manufactures, has now been followed by a volume called "Projection; the Development of Surfaces and Penetration of Solids." This volume which, as well as the first, is by Mr. Ellis A. Davidson, Science and Art Lecturer in the City of London Middle Class Schools, following up the course struck out by its predecessor, enters fully into the scientific methods of projecting solids, the curves formed where one solid penetrates another, and the shape metal must be cut so that on being rolled, bent, or folded it may give the required form; the theory and practice of geometrical projection, &c. The work also contains a chapter called "Plain Hints on Linear Drawing—an Essay on the use of the various Mathematical Instruments;" and in order to its importance as a text-book, 100 questions for examination are given. The lessons, which are given in the simplest manner, are illustrated by 43 whole-page cuts, drawn on wood by the author. The two volumes, which are rapidly being introduced into the schools and colleges throughout the Kingdom, have been placed by the Science and Art Department on the list of books supplied by them to the Government Schools of Science and Art. We understand that Vol. III., "Building Construction," by the same author, is in the press. In order to give a technical tendency to the instruction in primary schools, Messrs. Cassells are also publishing their "Primary Series;" one of these is called "Right Lines in their Right Places, or Geometry without Instruments;" another "Our Houses;" giving an account of the processes, materials, tools, &c., employed in building. Both of these are by the author of the Technical Series.

Notes.

ANTIDOTE TO PHOSPHORUS.—The value of essence of turpentine as an antidote to the effects of phosphorus has long been recognised in Paris as well as in London, and M. Personne, apothecary at the Hospital of La Pitié, has brought the question before the scientific world by a series of experiments upon dogs; he has found that in all cases in which turpentine has been administered to the animals a few hours after they had taken phosphorus they exhibited symptoms of intoxication, but recovered; whereas when turpentine was not given they invariably died. In other cases in which turpentine was given immediately after the phosphorus the animals were scarcely made ill at all.

THE MONT CENIS TUNNEL.—The position of the works of the Mont Cenis Tunnel up to February 28th was as follows:—

	Metres.
Length driven at Bardonneche	5,474·60
Length driven at Modane	3,911·90
Total length driven up to Feb. 28th	9,386·50
Length remaining to be driven	2,833·50

Total length of tunnel.... 12,220·00

During the first two months of the present year, the total length of tunnel driven has been 219·70, of which 111·05 at Bardonneche, and 108·20 at Modane.

APPLICATION OF THE OXYHYDROGEN LIGHT TO STREET LIGHTING.—M. Tessié du Motay continues his experiments with oxyhydrogen gas in the courtyard of the Tuilleries, with success as regards the effect produced, but we know nothing yet of the comparative cost of this and ordinary gas. Several modes of lighting were tried; on the occasion of the late balls and other entertainments given at the palace; powerful lamps were placed on the triumphal arch at the entrance, and at other points of the enclosure, and a very brilliant effect was produced without unpleasant dazzling. On ordinary occasions the oxyhydrogen light is placed in the usual gas lanterns, and the light is very pleasant as well as effective. At the main entrance to the courtyard are two large lamps, which each contain three lights, and the effect is very brilliant. The zircon cylinders used are certainly effective, and they are said to exhibit scarcely any alteration whatever after considerable use. Those used generally at the Tuilleries are very small, apparently about a quarter of an inch high, and even less than that in diameter; they are pierced vertically through the centre, and are merely placed on platinum points.

Correspondence.

PORPOISE OIL.—SIR.—Since the publication of my note, in your *Journal* of the 5th ult., I have read the following sentences connected with the subject, and which show its former utility. A notice, dated Glasgow, April 9, 1753, stated:—"Small harpoons are making here for killing porpoises off the Western Isles. These fish, which appear in June and July, yield from one to six barrels of oil each, and are so slow in motion that yawls with four oars can easily come up with them. It is but within these four years that this kind of fishing has been attempted, and if pursued with small craft will undoubtedly prove beneficial, as it requires but small expense, and the practice is a kind of diversion." Money premiums, or the gold medals of the London Society of Arts, were offered by this Society for porpoises and their oil, until June, 1803, inclusive. An additional premium of ten guineas was offered by the Society "to the person who shall strike the greatest number of whales, not fewer than three, with the gun harpoon." According to Maunder ("Scientific Dictionary"), the Rev. Dr. Clayton, about 1735, first tried gas experiments, and published a paper about it in "Philosophical

Transactions," 1739. (See "British Cyclopaedia," article on "Gas.") It was neglected for some sixty years, when Mr. W. Murdoch, employed in Boulton's Soho foundry, experimented, and, in 1798, erected a gas apparatus there. (See *Edinburgh Review*, for January, 1809; and "Royal Society's Transactions," for February, 1808.) Mr. Winsor, in 1803, exhibited gas light in the old Lyceum Theatre, London; and, in 1807, at Carlton Palace. In the years 1809-10 he proved its utility further by lighting one side of Pall-mall, where he resided for some time, although, after the failure of his projected company, he resided at Paris, where he died. He obtained a patent on the 7th March, 1807, and one in 1811. He had lived at Winchmore Hill, where his cottage, near the King's Head Inn, remains.—I am, &c., CHR. COOKE.

London, March 20, 1869.

MEETINGS FOR THE ENSUING WEEK.

- MON**.....R. United Service Inst., 8^½. Mr. Chas. F. Henwood, "The Conversion of our Wooden Line of Battle Ships into Armoured Turret Ships."
Royal Inst., 2. General Monthly Meeting.
Entomological, 7.
British Architects, 8.
Medical, 8.
Asiatic, 3.
Victoria Inst., 8.
- TUES** ...Civil Engineers, 8. Continued discussion on "American Locomotives and Rolling Stock."
Pathological, 8.
Anthropological, 8.
Syro-Egyptian, 7. Annual Meeting.
Royal Inst., 3. Prof. Grant, "On Stellar Astronomy."
- WED** ...Society of Arts, 8. Mr. Charles Tomlinson, "On the Theory of Boiling, in connection with some Processes in the Useful Arts."
Pharmaceutical, 8.
R. Society of Literature, 4^½.
Obstetrical, 8.
- THUR** ...Royal, 8^½.
Antiquaries, 8^½.
Zoological, 8^½.
Royal Society Club, 6.
Artists and Amateurs, 8.
Mathematical, 8.
Royal Inst., 3. Prof. Tyndall, "On Light."
- FRI**Astronomical, 8.
Royal Inst., 8. Dr. Carpenter, "On the Temperature and Animal Life of the Deep Sea."
- SAT**R. Botanic, 3^½.
Royal Inst., 3. Mr. A. Geikie, "On the Origin of Land Surfaces."

Patents.

From Commissioners of Patents' Journal, March 26.

GRANTS OF PROVISIONAL PROTECTION.

- Anchors—828—W. R. Lake.
Animal substances, &c., preserving—727—G. Spencer.
Annealing ovens and kilns—784—J. Tenwick.
Boilers, apparatus for diffusing the heat and promoting the generation of steam in—786—W. A. Martin.
Bottles, &c., packing—798—W. McAdam and S. Schuman.
Bottling apparatus—790—H. D. Rawlings.
Caissons and pontoons—261—C. Lingley.
Capstans, &c.—774—W. H. Harfield.
Card grinders—788—J. C. Shaw.
Carding engines—796—J. Taylor, R. and J. Ingham, and J. Sharples.
Carriages, &c., connecting and disconnecting apparatus applicable to pole heads for—766—G. Bray.
Cooking apparatus—778—E. W. and M. Slade.
Dressing bags—705—W. Saunders and C. Smith.
Floor cloths, &c.—814—M. Rourke.
Furnaces—824—E. Booth, W. P. Gaulton, and J. Walls.
Gas, apparatus used in manufacturing—732—W. T. Carpenter.
Goloshes, &c.—760—W. Coxhead.
Harness, &c., safety hook for—816—H. Starr.
Hats, &c., machinery for hardening and felting the bodies of—780—C. Vero.
Heated air, producing and applying—832—A. B. Walker.
Inkstands—343—E. D'Artois.
Looms—804—J. L. Norton.
Magnetic regulators—770—L. Labadie.
Meat, &c., preserving—3775—J. Millward.
Metallic joints, constructing and forming—451—E. G. Brewer.

- Mules and twiners, self-acting—802—W. Robertson.
Ordnance, mounting and working—739—A. Moncrieff.
Paper, preparing pulp for—772—A. M. Clark.
Picture frames, &c., mouldings for—433—A. C. Engert.
Ploughs, apparatus for working—437—F. J. Vandenvinne.
Printing blocks, plates, &c.—806—E. Roper and G. Shaw.
Propellers—161—W. R. Lake.
Railway trains, communication in—181—J. Edwards.
Railway trains, communication in—721—G. Goldsmith.
Railway trains, signalling on—725—J. Edwards.
Railway tunnels, ventilating—820—J. Ramsbottom.
Railways, transporting minerals, &c., upon—800—F. Render.
Road locomotives—717—B. Hunt.
Roads and tramways, paving for—764—D. S. Price.
Rosin oil, manufacturing—3862—E. P. H. Vaughan.
Screw propellers—812—H. Claughton.
Sewage, treating—828—J. T. Darke.
Ships' bottoms, &c., paint for protecting—762—H. J. B. Kendall.
Ships' sails, yards, and rigging—792—G. P. Evelyn.
Smoke-consuming apparatus—830—J. Partington, jun.
Steam cocks, &c.—768—H. J. Céanat.
Steam engines and boilers—818—J. H. Bennett.
Steam vessels—794—W. R. Lake.
Tissue—776—H. Delattre.
Velocipedes—808—E. W. P. Gibbs.
Velocipedes—834—J. Cox.
Velocipedes, &c.—810—T. Rickett.
Water, apparatus for raising—690—W. A. Gilbee.
Wire, &c., cutting—372—J. C. Shaw.
Wood, apparatus for cutting—822—G. R. Mather.

INVENTION WITH COMPLETE SPECIFICATION FILED.
Felt cloths, machinery for felting—874—G. T. Bousfield.

PATENTS SEALED.

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| 2976. J. Wadsworth. | 2990. H. Jewitt. |
| 2977. W. E. Gedge. | 2991. V. Juge. |
| 2979. J. H. Irwin. | 2992. J. Mabson. |
| 2980. E. T. Hughes. | 2995. W. Richardson. |
| 2981. A. H. Brandon. | 3006. H. Highton. |
| 2984. W. Hallam & H. J. Madge. | 3013. R. Legg. |
| 2987. E. Horton. | 3023. N. Henwood. |
| 2988. G. Daws. | 3026. C. E. Broome. |
| 2989. W. Gadd and J. Moore. | |

From Commissioners of Patents' Journal, March

- PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.**
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| 878. R. Newton. | 894. F. P. Warren. |
| 887. J. Ramage and T. Nelson. | 901. W. Deakin and J. B. John |
| 963. E. C. Prentice. | son. |
| 984. J. McNaught and Wm. | 898. C. T. Liernur. |
| McNaught, jun. | 905. T. Ryder. |
| 888. S. Barbour. | 915. J. C. Martin. |

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

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| 1027. C. P. Coles. | 919. H. J. Madge. |
| 903. H. Pooley, jun. | 859. W. F. Smith & A. Coventry. |
| 815. E. Morewood and A. Why- | 913. H. Smith. |
| cock. | 914. J. H. Johnson. |
| 825. E. Morewood and A. Why- | 929. G. and J. Collier. |
| cock. | 952. J. C. Kay and W. Hartley. |

Registered Designs.

- 5003—March 4—Reversible file—John Gray, Phoenix Works, St. Mary's-road, Sheffield.
5004—March 6—The apomecometer—Richard Clayton Millar, 197, Great Brunswick-street, Dublin.
5005—March 17—Frame for dressing bags, travelling bags, purses, and other articles—Philip Jacob Lack, Whiskin-street, Clerkenwell.
5006—March 17—Bread cutter—Ernest August Dreyer, Finsbury-square.
5007—March 17—A refrigerator, to be called the new duplex refrigerator—The Wenham Lake Ice Company, 140, Strand.
5008—March 17—A scarf ring—Jean Jacques Rohrbach, 29, Polygon, Euston-square.
5009—March 18—Mr. Bird's inhaling pipe—James Bird, 80, Seymour-street, Connaught-square, W.
5010—March 18—Portable camp stool and seat—Warren Sharman, Melton Mowbray.
5011—March 19—A core for moulding chimney flues or drains in concrete houses—Drake, Bros., and Reid, 208, New Kent-road, S.E.
5012—March 20—Cash box—Perman and Stamps, Birmingham.
5013—March 24—Optical miltum in parvo—Richard Pilkington, West Ham, Essex.
5014—March 27—Stench trap—Charles Winn, Birmingham.
5015—March 31—Oval case—Adolphus Ash, 30, New-road, Woolwich, S.E., and Henry Mason, 1, Plumstead-road, Woolwich, S.E.